JOURNAL OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS

THIRD SERIES

VOL. 43. No. 20 — 17 OCTOBER 1936

CONTENTS FOR 17 OCTOBER 1936

VIEW OF THE SITE OF PERACHORA

In the foreground is the third temple of Hera Akraia. Beyond, the first temple and the fourth-century portico. Hellenistic buildings and the sanctuary of Hera Limenia up the hill. Perachora has been the British School at Athens' chief excavation since 1930

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Journal

The Coming Session General Meetings

The 1936-37 sessional meetings open on Monday, 2 November, when the President will give his inaugural address and Mr. R. H. Uren [*A.*] will receive the London Architecture Bronze Medal for 1935 for his building, Hornsey Town Hall. Subsequent meetings during the session have been planned to cover as far as possible the interests of the profession. It is quite impossible to satisfy everybody's desire to have their pet subjects ventilated in the seven evenings during the session devoted to papers, but certainly this year the list of subjects is so generous in its scope and so closely related to current needs that most people will be likely to find that their interests are fairly met.

At the second meeting, on 16 November, Miss Elizabeth Denby will read a paper on *Rehousing From the Slum-Dweller's Point of View*. Miss Denby worked for many years at slum clearance and rehousing with the Kensington Housing Trust. In 1932 she organised the first New Homes for Old Exhibition at Olympia, which for the first time focused attention on the extent of the national housing problem. She is on the executive of the Pioneer Health Centre, Peckham, and of the Housing Centre. In 1933-34 she held a Leverhulme Research Fellowship which enabled her to travel widely on the Continent; the results of her tour are shortly to be published in a book. Miss Denby is now putting her experience of working-class needs into practice as a consultant on low-rent schemes, and has already been closely concerned in two estates: R. E. Sassoon House for Mrs. Meyer Sassoon (in collaboration with Messrs. Adams, Thompson & Fry) and in collaboration with Messrs. Robert Atkinson, Fry, James and Wornum in an estate in North Kensington for the Capitol Housing Association, a scheme which includes a nursery school and clubs. Last year, in conjunction with others, she started a shop called House Furnishing, Ltd., in a London slum area to supply good furniture at reasonable prices. One of her most recent appointments, and perhaps the most important, is as a co-opted member of the L.C.C. Housing Committee. Incidentally this evening will be an "Occasion" in R.I.B.A. domestic history, for Miss Denby will be the first woman ever to read a sessional paper to the Institute.

On 30 November Mr. Wesley Dougill will read a paper on *Architectural and Planning Developments at the Seaside*. As R.I.B.A. Godwin and Wimperis Bursar in 1935 Mr. Dougill made a close study of seaside development here and abroad. The subject is one that needs no advertisement. As long as Englishmen go to the seaside for their summer holidays, which we hope will be always, the problem will be constantly brought to mind and as constantly aggravated. There is hardly a seaside resort which has not degenerated from its former beauty and hardly one which could not be improved by careful town planning and architectural control. Presumably Mr. Dougill will have something to say on what might be done in the future. We shall see that his opinions get home to the controlling authorities of the seaside places.

After Christmas there are to be papers on *Building Finance and Architecture*, by Mr. T. P. Bennett; *Town and Country Planning under the Act*, by Mr. G. L. Pepler; and *The Working of the Advisory Panel System*, by Mr. G. H. Jack. Professor W. G. Holford and Mr. A. G. S. Fidler will talk on the same evening on the *British School at Rome*; and, to end the sessional papers in 1937, Mr. H. S. Goodhart-Rendel will talk on *Recent Architecture in France*. During the session there will be two social evenings, the first a musical evening on 14 December.

Other Events

Other events of importance will be the annual dinner, which is to be held on Friday, 5 February 1937, at the R.I.B.A., and the annual reception on Friday 28 May. The annual Conference will be held in Leeds from 23 to 26 June 1937. On Thursday, 26 November, the Dramatic Society will perform Francis Molnar's Liliom (see p. 1101).

Informal Meetings

Informal general meetings, organised by the Junior Members' Committee, will be held this session as they were last, on Wednesday evenings. The dates fixed are as follows:—9 December 1936, 10 February 1937, 10 March 1937, and 5 May 1937. The subjects for discussion will be announced later.

Books for Allied Societies' Libraries

During the last few months the library has cleared out several hundred duplicate or triplicate books which are no longer wanted in the central collection. They are being discarded not because they are useless but because we have found that, owing to the gradual changes in the demand, we are able to do with one or two copies of works of which previously we needed four or five. Others are books which can be freed from the collection because we have been presented with other and perhaps better bound copies. The Literature Committee have decided to follow the precedent of previous "clear outs" and to offer all these books to the Allied Societies' libraries. *Will the librarians or secretaries of all Allied Societies who would like to share in the distribution please write before 1 November to the librarian at the R.I.B.A.?* These books are almost all works which are likely to be of use, most of them are important and large historical books, monographs on buildings, etc. It is our constant endeavour to stimulate the growth of architectural libraries throughout the country, and hope and expect that there will be a keen response to this offer.

Sir Banister Fletcher, Master of the Carpenters Company

Sir Banister Fletcher, Past-President of the Institute, has been elected Master of the Worshipful Company of Carpenters. This is the culmination of a long connection with the Company of which Sir Banister's father, Professor Banister Fletcher, was at one time Master. Sir Banister was elected to the Livery forty-eight years ago; in 1916 he was appointed Surveyor in succession to his brother, Major Phillips Fletcher, F.R.I.B.A., and Director of the Trades Training School. The latter post is now vacant.

The Building Exhibition

Unfortunately the Building Exhibition at Olympia came at a time when there were no R.I.B.A. journals, so that our comment can be little more than a reminiscence. In size it was the largest and in the quality and variety of the commodities shown undoubtedly the best building trade exhibition that there has ever been. There were more and better architect-designed stands than usual, but as there were more stands than ever the number of appalling and inefficient stands was perhaps as great as ever. It may be the most difficult thing in the world to bring about, but no architects will feel quite happy in Olympia until the general quality of the layout of the show as a whole and the individual stands is better. It is not merely a jingoistic idea of employing more architects or any unnatural confidence that architect-designed stands are always good; it is much more fundamentally a matter of efficiency and convenience. The monotonous grid plan is bewildering and dull—this has been proved in town planning and applies as surely here—and unsatisfying to the exhibitors; and the bad stands are, on the whole, those where goods are inefficiently displayed.

There was one large part of the show where able exhibition was seen at its best. In the New Homes for Old Exhibition in the gallery the Housing Centre, the M.A.R.S. group and A.T.O. had a first-rate theme and presented it as near faultlessly as could be. The space was magnificently used, the sections of the exhibition were none of them too large and the "story" of the whole was cogently told by photographs, plans, drawings, figures and statements. It must have had effect on some at least of the thousands who flocked through the place, too many, alas, with that desultory gaping vacuity of people who have already walked several miles, but some alive to see and read and learn! In the course of the fortnight the New Homes for Old Exhibition attracted visits from His Majesty the King, the Minister of Health and Mr. Morrison, leader of the Labour Party in the L.C.C. The exhibition is designed to go on tour. If any member knows of a place in the provinces where it could be exhibited he is asked to write to the Housing Centre, 13 Suffolk Street.

Particular praise is due to Miss Judith Ledeboer [*A.*], who was chairman of the Exhibition Committee, and to Mr. Misha Black, who designed the layout and all the details of the presentation. Mr. Black's work was visible and earned praise from everyone, but Miss Ledeboer's work mostly lay behind the scenes, and on that account all the more deserves recognition here. Finally, while on the subject of the Building Exhibition, we must once again thank Mr. Greville Montgomery for a list of kindnesses too long to record in full. The A.B.S. benefited handsomely from the dance and the allocation on account of architects' entrance tickets. The dance brought in £227. The New Homes for Old was only possible because he gave the site and considerable monetary help in addition, and the R.I.B.A. members' room, which he made possible, justified itself every day by attracting tired architects to the comfortable chairs and welcome refreshment.

Permanent Exhibition Photograph Collection—Street Furnishings

The Exhibition Committee would be very grateful to any architects who could lend them for the purpose of selection small photographs or illustrations of street furnishings—lamp-posts, kiosks, shelters, etc.—which they have collected during tours on the Continent or abroad. As much information as possible should accompany each photograph, and it would be particularly helpful to the Committee to know the names of the architects, designers or firms responsible for their construction.

THE RISE OF THE MASON CONTRACTOR(1)

By DOUGLAS KNOOP and G. P. JONES

The English building industry in the later Middle Ages differed greatly both from most other industries at that time and from the building industry at present. Mediæval houses were generally built of wood and clay; stone and brick came into use gradually for chimneys and floors, but it is only in the modern period that these materials came to be commonly used in house building. Mediæval town walls were doubtless constructed of stone and likewise certain churches, monuments, bridges and halls, but the principal stone structures at this period were abbeys, priories, cathedrals and castles. These often lay outside the towns, and even when they were situated in a town their builders do not appear to have relied primarily on finding skilled craftsmen locally.

In most mediæval industries production was on a small scale and was directed by independent craftsmen or "little masters" employing one or two journeymen or apprentices who had some hope of becoming, in time, independent masters themselves, but the stone-building industry was generally organised on a different basis. Larger building jobs were usually executed by what we should now call the "direct labour" system: the employer—commonly the Crown or the Church—appointed certain officials, such as a master mason and a clerk of the works, to organise and administer the building operations, to arrange for supplies of materials and to engage the necessary craftsmen and labourers. Smaller building jobs, however, and sometimes parts of larger jobs (2), were not infrequently done by contract, and in this paper we endeavour tentatively to trace the rise of the mason-contractor by considering three aspects of the problem, namely (i) the ways by which the status of contractor might be attained; (ii) the origins from which contractors rose; (iii) the character of the agreements into which they entered.

(i) WAYS OF ATTAINING THE STATUS OF CONTRACTOR.

The beginnings of the mason-contractor have probably to be sought in more than one direction, but for want of adequate evidence it is impossible to speak with certainty either of the antiquity or of the relative importance of any one particular line of development. The need for large financial resources, the irregularity of work and the substantial risks involved would prevent most mediæval stone workers from attempting to set up for themselves permanently, and we are disposed to think that in the early days of contracting there was no sharp dividing line between contractors and workmen: a stoneworker might be a contractor at one period and a wage or salary earner at another, or even at the same time.

The oldest form of contracting which we have been able to trace is that of task work (*opus ad tascam*). In some cases where individual workmen were paid by the foot for scappling or cutting stones, as, for example, certain layers at Caernarvon Castle in 1316-17 and at Beaumaris Castle in 1319 (3), task work must be regarded as the mediæval equivalent of modern piece wages. This, however, does not appear to have been the usual way of arranging task work; frequently large sums are entered in building accounts as being paid either to a mason and his fellows (*socii*) or simply to one man. Thus in 1253 at Westminster Abbey, Adam de Aldwych and his fellows were paid 14s. 8d. in one week for cutting so many feet of "crest" at task (4), and in 1278 at Vale Royal Abbey three masons, with their fellows and labourers, were paid 100s. for digging, cutting, preparing and finishing one thousand stones at task (5). In this type of case,

(1) This article gives the substance of a paper read to the Economic History section of the Anglo-American Historical Conference in July 1936.

(2) E.g., at the erection of a new bakehouse, built of stone, at King's Hall, Cambridge, in 1411-12, no regular contract was made for the whole building but small agreements were made with different workmen for materials or labour as required (Willis and Clark, *Arch. Hist. of the University of Cambridge*, vol. II, p. 440).

(3) Knoop and Jones, "Castle Building at Beaumaris and Caernarvon in the Early Fourteenth Century," *A.Q.C.*, vol. xlv, p. 27.

(4) Fabric Roll printed in G. G. Scott, *Gleanings from Westminster Abbey*, 2nd edition, p. 241.

(5) Building Account printed in J. Brownbill, *The Ledger Book of Vale Royal Abbey* (Lancs and Cheshire Record Society, 1914), p. 207.

especially where a relatively small odd amount is in question, one is frequently uncertain whether the amount stated represents collective earnings or whether the clerk of the works paid each individual his piece wages separately, but for the sake of simplicity entered a lump sum in the surviving accounts. Where a relatively large sum is entered as paid to one man, as, for example, £18 6s. 8d. entered in the Pipe Roll as paid to the mason for unspecified task work at Windsor Castle in 1165-66 (6) and £7 13s. 1d. paid to Master Alberic at Westminster Abbey in 1253 for various stonework cut by task (7), we are satisfied that we are concerned with contractors, who themselves employed masons (though whether at piece rates or at day rates there is nothing to show), and that their reward consisted of the difference between the sums they received at task and the sums they paid out as wages. This was probably the case with all substantial sums entered as paid to "A. B. and his fellows" or "A. B. and C. D. and their fellows." The Westminster fabric roll of 1253 shows that a large amount of stone was dressed by task, but in most cases there is not sufficient detail to show whether this should be regarded as piece-wages or as contract work. On the other hand, at Vale Royal Abbey in 1278-80 (8), at Caernarvon Castle in 1316-17 and 1319, and at Beaumaris Castle at the same dates (9) there was very little task work of any description. This appears also to have been the case at Windsor Castle before the Black Death (10).

It has to be recognised, however, that even before the Black Death, where smallish jobs were concerned, cases of task work or of minor building contracts may not have been uncommon, though on account of the relative unimportance of the undertakings and the remoteness of the age only few records have survived. In the thirteenth century and in the first half of the fourteenth, some royal work was undoubtedly done by contract (11), and occasional municipal and private contracts (12) for this period can be traced.

After the Black Death task work of the contract variety appears to have become more common (13), which may perhaps be accounted for by the scarcity of labour and the need for finding more economical methods of working. Thus, for example, in 1362-63, two layers, John Martyn and John Wylot, who were working at Windsor at day wages, were also paid substantial sums for making vaults at task, whilst in subsequent years they received even larger sums for building walls at Windsor. During the same years Hugh de Kympton and other masons were paid sums varying from £30 downwards for dressing stone at task, and on one occasion, in 1365-66, Kympton joined Martyn and Wylot in building a wall at task (14).

(6) Extract from Pipe Roll quoted by W. H. St. J. Hope, *Windsor Castle*, vol. I, p. 22 n.

(7) Fabric Roll, *loc. cit.*

(8) Knoop and Jones, "The First Three Years of the Building of Vale Royal Abbey, 1278-1280," *A.Q.C.*, vol. xliv, pp. 24, 25.

(9) Knoop and Jones, "Castle Building at Beaumaris and Caernarvon in the Early Fourteenth Century," *A.Q.C.*, vol. xlv, pp. 26, 27.

(10) Apart from the twelfth century example mentioned above, we have only noted the case of a well in 1252, which was to be "committed to workmen to make at task work" (St. J. Hope, I. 53) and it is not even certain that any masons were involved.

(11) E.g., in 1251 Master Robert de Walden, *cementarius*, undertook to finish the masonry of two chambers at Havering and perform other work *ad tascam* for £95 (*Cal. Close Rolls 1247-51*, p. 556); in 1255, orders were given that the masonry work of the King's house at Guildford should be done at task (*ibid., 1254-56*, p. 26); in 1256, John of Gloucester, King's mason, was commanded to view the defects in the Tower of London, and to commit the repairs to some body at task (*Ibid.*, p. 301); in 1346 and 1347, Nicholas de Ailyngton, "the prince's mason of his works at the manor of Kenyngton" did work by contract at Kennington for the Black Prince (*Black Prince's Registers*, vol. I. pp. 27, 104).

(12) E.g., in 1342, the city of Chester agreed to pay John de Helpeston, *cimentarius*, £100 for the erection of a tower and a specified amount of walling (Morris, *Chester in Plantagenet and Tudor Reigns*, p. 244); in 1321, John Rengwyne of Wogham, mason, undertook for a sum of £23 6s. 8d., *plus* one quarter of wheat, to build a hall at Hammes in Sussex for Sir Geoffrey de Say (*Archæological Journal*, vol. xxiv, pp. 56-58).

(13) E.g., writing of Robert de Burnham's Accounts at Windsor, 1351 to 1354, St. J. Hope (p. 136) says they include, as before, general statements as to the purchase of materials and implements, the cost of their carriage or cartage, the total sums paid in wages, and—what has not hitherto been met with in these accounts—a list of works undertaken and carried out *ad tascam*.

(14) See St. J. Hope, vol. I, pp. 186, 189, 197, 199, 201. **John Martyn** worked at Windsor at 5½d. per day in 1351-2 (*Exch. K.R.* 492/28), in 1353-4 (*Exch. K.R.* 492/30), in 1356 (*Exch. K.R.* 493/1) and at 6d. per day in 1361-2 (*Exch. K.R.* 493/10) and in 1362-3 (*Exch. K.R.* 493/11). In 1362-3 he was paid £40 and £16 13s. 4d. for making a vault at task; in 1364 £259 6s. 8d. (jointly with Wylot) for building a wall at task; in 1365 £102 13s. 4d. (jointly with Kympton and Wylot) for building a wall at task; in 1367-8 £150 11s. 1d. for building a wall at task; and in 1368 £90, £22 and 40s. for building a wall and making a gate at task. After 1365 there was a very marked decrease in building activity at Windsor and Martyn apparently disappears.

John Welot [Wylot] worked at Windsor at 6d. per day in 1362-3 (*Exch. K.R.* 493/11); in the same year he received £71 10s. and £13 6s. 8d. for making vaults at task. In 1364 he was paid £259 6s. 8d. (jointly with Martyn) for building a wall at task; in 1365-6 £102 13s. 4d. (jointly with Kympton and Martyn) for building a wall at task; in 1367-8, £53 6s. 8d. for building part of a tower at task. He is probably the same as the John Wylot who was one of the six layers and setters named in the London Regulations for the Trade of Masons, 1356 (printed in Knoop and Jones, *The Mediæval Mason*, pp. 249, *folg.*).

Hugh Kympton was overseer (*apparator*) at Windsor at a wage of 3s. 4d. per week for 29 weeks in 1361-2 (*Exch. K.R.* 493/10) and for 34 weeks 1362-3 (*Exch. K.R.* 493/11). He held the same office there in 1365-6 (*Exch. K.R.* 493/22) when he was paid for three weeks at 4s. and 10 weeks at 3s. 4d. In 1364 he and his fellows

Unfortunately we cannot trace any of these three men as having worked or taken contracts elsewhere. In a contemporary case we are more fortunate. William Sharnhale was engaged in 1368 on the repair of Rochester Castle as a setter, being the first setter named on a list of eleven who were paid 6d. per day each for 180 days. The same account shows that he was paid 106s. 8d. for setting a vault by task work (15). Some twelve years later Sharnhale was the principal contractor at the building of Cowling Castle, for which he was to receive £456 from John, Lord Cobham (16).

The system of task work of the contract variety appears to have grown and to have become more common, especially in the seventeenth century. When building accounts came to be kept in English, however, the terms used tended to vary. The expression "taske worke" occurs in the account of the Senior Bursar of Trinity College, Cambridge, for 1601-2 (17). More commonly the term used at Cambridge appears to have been "bargain" (18). At Windsor, in 1678, we find a payment to two masons "for workmanship by them performed by agreement" (19), whereas at Bolsover Castle in 1613, where task work or its equivalent was much in use, payments to "A. B. and his fellows" are entered in the account for specified work done, without reference to any agreement or bargain (20), and the same was sometimes true at Cambridge (21).

It is, of course, exceedingly difficult, if not impossible, to trace in detail the career of any contractor from the time that he was a workman at daily wages, through the stage of accepting small contracts or task work, until he had developed into a large-scale contractor. The nearest approach, perhaps, to a fairly complete history of a contractor who may be said to have been the architect of his own fortune is available in the case of Samuel Fulkes, who worked as a mason in London at 2s. 6d. per day in 1664, took small contracts of £9, £14, £117 and £613 in the 1670's, and much larger contracts for £1,888, £1,946, £3,204 and £3,335 in the 1680's, at the end of which decade he became one of the principal masonry contractors at St. Paul's Cathedral, a post which he held more or less continuously for 20 years (22). Another great mason-contractor at St. Paul's, who had a somewhat similar career, was Nathaniel Rawlins (23).

Task work, however described, probably offered the working mason in the Middle Ages the best opportunity of rising from the ranks of the wage-earners to a position of greater economic independence. In its simplest form it would be merely piece wages, but even that would accustom the mason to link up wages and output. More commonly it would appear to have been what in modern times has been described either as "piece-wage foremanship" (where the subordinate workers are in the employ of the foreman's employer), or "sub-contracting" (where the subordinate workers are in the employ of the man entering into the bargain or agreement). During the nineteenth century piece-wage foremanship is said to have been by no means unknown in the building industry (24), but early building accounts suggest that mediæval task work was sub-contracting rather than piece-wage foremanship. In the middle of the nineteenth century the sub-contract system was not uncommon, being used, for example, in industries allied to building, such as the slate quarries of North Wales, and in connection with railway construction (25). It met with the warm approval of such economists as Cairnes, Thornton and McCulloch; according to the last, the foundations of thousands of fortunes were laid in that way. Later economists have taken a much less favourable view of the system, holding that in many cases it leads to industrial sweating.

Whether cases of task work or contracts in the early building industry were prejudicial to the subordinate workers or not there is little evidence to show. We know of none before the seventeenth century, when the *Account Book* of Nicholas Stone (26), the well-known tomb and monument maker,

were paid £17 7s. 6d. for working stones in the quarries at task and in 1365-6 he was paid £102 13s. 4d. (jointly with Martyn and Wylot) for building a wall at task. He is very possibly the same as the Hugh de Kymton who was commissioned to take cartage for stone for Windsor in 1343-4 (St. J. Hope, p. 113).

(15) Fabric Roll of Rochester Castle, printed in *Arch. Cant.*, vol. II, p. 123.

(16) See *Arch. Cant.*, vol. II, pp. 95 *folg.*, and Knoop, Jones and Lewis, "Some Building Activities of John, Lord Cobham," *A.Q.C.*, vol. xlv, pp. 44 *folg.*

(17) Willis and Clark, vol. II, p. 486 n.

(18) E.g., at Trinity College, Cambridge, in 1555 (Willis and Clark, vol. II, p. 562 n.) and frequently in the Clare Hall Accounts about 1640 (*ibid.*, vol. I, pp. 97, 99). *Bargain* may be taken as the equivalent of *conventio* in medieval building accounts.

(19) St. J. Hope, vol. I, p. 316.

(20) Knoop and Jones, "The Bolsover Castle Building Account, 1613," *passim*. The rate paid was doubtless based on an agreement.

(21) Willis and Clark, vol. I, p. 101.

(22) Knoop and Jones, *The London Mason in the Seventeenth Century*, p. 33.

(23) *Ibid.*, p. 34.

(24) D. F. Schloss, *Methods of Industrial Remuneration*, 3rd ed., p. 174.

(25) *Ibid.*, pp. 182, 184.

(26) Printed by the Walpole Society, vol. vii, edited by W. L. Spiers.

who gave out a considerable amount of work in connection with his contracts, certainly suggests somewhat low rates of remuneration in relation to the sums he received. In the early eighteenth century there appear to have been cases of contractors paying their men substantially less than the normal day wages (27), but how common that was we are unable to say.

Task work or bargains, if paid by small instalments, as was not uncommonly the case (28), would call for little or no capital on the part of the contractor, especially if he did not have to provide materials. An enterprising layer, for example, might undertake to build a section of a wall at so much per yard, with the assistance of one or two men, and thus gain experience to enter into larger contracts in the future. In modern times, it is not at all uncommon for bricklayers to take small building contracts by means of which shrewd men ultimately rise and become established building contractors. In other cases, however, and possibly more often, it leads to the bankruptcy of the workman and to losses on the part of builders' merchants and of employers. Somewhat similar results no doubt occurred in the Middle Ages and later. Thus in the sixteenth century two masons undertook to keep the walls of Chester in repair for 40s. per annum, but experience showed them that they had entered into a bad bargain, which they repudiated (29). The two freemasons Wigge and Symons, who undertook to build the second court of St. John's College, Cambridge, at the end of the sixteenth century, are said to have ruined themselves over the contract and to have provided the College with a somewhat unsatisfactory building (30). The danger from the employers' point of view no doubt led, in some cases at least, to a system of guarantors or sureties. This was definitely stipulated for in the case of work " in gross " in the London Regulations for the Trade of Masons, 1356, which required a contractor to provide four or six men of his trade to act as sureties for the satisfactory completion of the contract (31). That this regulation, or its equivalent, was observed in some cases at least would seem certain, for at the end of the fourteenth century we find Walter Walton, of London, mason, John Swalowe, of Gloucestershire, mason, and others becoming sureties that Thomas Wolvey, mason, would complete the masonry of Henley Church (32). In 1432, when John Marwe, citizen of Norwich, freemason, undertook to rebuild the quay at Conesford, for the sum of £53 6s. 8d., he had to give security for the due performance of the contract, and Richard Reyner, of Thornegge, freemason, is named as his surety (33). Sometimes the guarantee was arranged differently, as, for example, when a contractor agreed to pay his employer a certain sum on a specified day, the obligation to be void, however, if the contract for the building had been truly performed (34). It was very possibly partly on account of entering into such obligations to pay a substantial sum of money, if a building was not finished by a certain date, that a craftsman might take a tradesman or other person of financial standing as partner in a building contract. Thus, when the first buildings of Queen's College, Cambridge, were erected in 1448, the two surviving contracts show that a draper and a carpenter were jointly the contractors and that they undertook to pay £100 in one case and £80 in the other if they failed to fulfil their agreements (35).

In some cases it is on record that the contractor could not find the security for the performance of his covenants. This occurred, for example, in connection with a contract of 1359 for building twelve chapels round the choir of the church of Vale Royal Abbey for a sum of £860. It was then arranged that the money, which was to be found by the Black Prince, should be paid to the Abbot, who was to control every payment made to the contractor and see that every instalment was expended on the works before the next was paid (36).

Where a mason rose from the ranks of the wage-earners and took work by task or by contract it is not improbable that, if and when he felt himself sufficiently established in his new position, he would set up a yard or workshop as the headquarters of his business, just as a master tailor or master baker

(27) For the case of Richard Jennings, Master Carpenter at St. Paul's in 1710, see *The London Mason in the Seventeenth Century*, p. 61.

(28) Willis and Clark, vol. II, p. 454, and *The London Mason in the Seventeenth Century*, p. 49.

(29) R. H. Morris, *Chester in Plantagenet and Tudor Reigns*, pp. 244-245.

(30) Baker, *History of St. John's College, Cambridge*, Mayor's ed., vol. I, p. 191.

(31) See *The Mediaeval Mason*, p. 250.

(32) *Cal. Close Rolls, 1396-99*, p. 239.

(33) The contract is printed in *A.Q.C.*, vol. xxxv, pp. 34 *folg.*

(34) Such an obligation between Thomas Crump, mason, and John, Lord Cobham, dated September 1381 (*Harl. Charters* 48 E. 42) is printed in *A.Q.C.*, vol. xlv, p. 51.

(35) Willis and Clark, vol. II, pp. 7 *folg.*

(36) See Knoop and Jones, " Some Notes on Three Early Documents Relating to Masons," *A.Q.C.*, vol. xliv, pp. 223 *folg.*, where the contract from the *Black Prince's Registers*, part iii, fos. 197 d. and 198, is printed.

would almost necessarily do from the outset. Of the prominent mason-contractors of the second half of the seventeenth century we know that some had "shops" in London, where they employed several men (37), and we think it likely that the same was true of earlier contractors. It is also possible that a mason may have become a "shopkeeper" without necessarily first becoming a building contractor. We can certainly trace masons with "shops" in London in the seventeenth century who never appear to have taken a building contract so far as we can tell. The case of statuaries and tomb-makers is referred to later, but we think it conceivable that small men, working alone, or with a servant or an apprentice, and willing to cut a few stones, or to do a small amount of paving, or to erect a wall, or to build or repair a chimney, may have had "shops" in the larger towns, and more especially in London, long before the seventeenth century. We are disposed to think that John le Wallere, who had a small house called "loge" without Aldgate in 1312 (38), may have set up for himself in London in this way, and the same was probably true of John Oubrey, mason, who was convicted in London in 1341 of forestalling a boat-load of paving stones (39). The fact that Thomas Wrek, of London, mason, who received payments in 1379 and 1381 for work done by contract for John, Lord Cobham, was the first named of the four masons to represent the craft on the Common Council of the City in 1376 strongly suggests that he had some kind of establishment in the City, and he may have been a "shopkeeper" before he became a building contractor.

Sculptors and tomb-makers frequently had their own workshops and may be regarded as specialised mason-shopkeepers, though cases are recorded of sculptors being hired to carve work on the site where the work was to be erected (40). The available evidence with regard to mediæval tombs and statues, however, seems to point to Purbeck marble being wrought in the Isle of Purbeck and to alabaster being carved in the Derbyshire or Nottingham areas where it was quarried (41). Thus a marble effigy was carved at Purbeck in 1227 and carried to Tarrant Monkton to be placed on the tomb of the Queen of Scotland (42), and John Bourde, of Corfe Castle, agreed in May, 1457, to supply the stone and workmanship of a tomb for Richard, Earl of Warwick, and to deliver and set up the tomb (43). In Nottingham there were undoubtedly carvers' workshops, for it was there in 1368 that Peter the Mason carved the alabaster table or reredos for the Chapel at Windsor, which cost £166 13s. 4d. and required 80 horses and 10 carts to transport it from Nottingham to Windsor (44). Another Nottingham carver, Nicholas Hill, conducted in the later fifteenth century a business in which art played less part, for in 1491 he sued his agent for an account of the sale of fifty-eight heads of St. John the Baptist, probably of standard pattern and made for stock (45). In the fifteenth century there were tomb-makers at Chellaston (46), and in the following century at Burton-on-Trent (47). It is probable that throughout the later Middle Ages there were also carvers' shops at York and London (48). Presumably John Massingham, who was paid £10 in September, 1449, for an image of the Virgin brought from London to Eton to be placed above the High Altar (49), was established in London at that time, although a few years previously he had worked as a carver for day wages at Oxford (50).

What unfortunately we do not know about all these early sculptors and tomb-makers is whether they ever entered into general masonry contracts, as did their London successors of the seventeenth century. It is possible, however, that these specialised workers in Purbeck marble and in alabaster stuck to their own jobs, and that it was only carvers working in ordinary freestone who from time to time executed general masonry con-

(37) E.g., Abraham Storey employed eight men at his "shop" and John Thompson four men at his "shop" in 1678 (*The London Mason in the Seventeenth Century*, p. 21) and Samuel Fulkes three men at his house in 1694 (*ibid.*, p. 33 n.).

(38) *Cal. Letter Book C*, p. 239.

(39) Thomas, *Cal. Plea and Memo. Rolls, 1323-64*, p. 139.

(40) E.g., Master Edward Canon, master stone-cutter, worked on the stalls of St. Stephen's Chapel, Westminster, in 1352 at 1s. 6d. per day (Lethaby, *Westminster Abbey and the King's Craftsmen*, p. 192); John Massyngham, sculptor, was employed at All Souls College, Oxford, to carve various statues and figures about 1440, being paid 4s. 8d. per week, together with his board and lodging (E. F. Jacob, "The Building of All Souls College," *Historical Essays in Honour of James Tait*, p. 130).

(41) Cf. Coulton, *Art and the Reformation*, p. 244, and Crossley, *English Church Monuments*, p. 30.

(42) Hutchins, *History and Antiquities of the County of Dorset*, vol. I, p. 466.

(43) *Ibid.*, p. 464.

(44) St. J. Hope, *Windsor Castle*, vol. I, p. 201.

(45) Stevenson, *Records of the Borough of Nottingham*, vol. III, p. 19.

(46) Crossley, *loc. cit.*

(47) *Arch. Journal*, vol. VIII, pp. 185-6.

(48) A. Gardener, "Alabaster Tombs of the Gothic Period," *Arch. Jour.* 1923 (especially pp. 4 n. and 23) and Coulton, *Art and the Reformation*, pp. 244, 545.

(49) Willis and Clark, vol. I, p. 402.

(50) Jacob, *loc. cit.*

tracts. Thus William Stanton, who employed nine men at his "house and yard" in 1678 and eight men at his "shop in Holborn" in 1694, in addition to a large monument business inherited from his uncle, Thomas Stanton, executed several substantial masonry contracts (51). Jaspar Latham, described as "an obscure sculptor," became one of the mason-contractors at St. Paul's (52) in the 1680's; Edward Pierce [Pearce], best known as a sculptor of portrait busts, was responsible for several not inconsiderable masonry contracts about the same period (53). Joshua Marshall, who had a large practice as a tomb-maker, built up originally by his father, Edward Marshall, executed many large masonry contracts after the Great Fire, including substantial work at St. Paul's (54).

Tomb-making might thus lead to general masonry contracting; so also might quarrying, and there is no lack of examples of quarrymasters who contracted to supply not only stone but workmanship for erecting a building. A fourteenth-century example is Thomas Crump, of Maidstone, who in 1381 contracted to build the Great Gateway at Cowling Castle and to supply dressed stone in substantial quantities (55). If the stone did not come from his own quarry, it probably came from that of two relatives, Ralph and Roger Crump, who supplied similarly dressed stone on more than one occasion about this time for Rochester and Queenborough Castles (56). In the fifteenth century we find William Orchard, architect and builder of much of Magdalen College, Oxford, contracting to supply the works with stone from his quarry at Headington (57). In the seventeenth century we have been able to trace more examples of quarrymasters acting as mason-contractors. Timothy Strong, who had quarries at Little Barrington (Glos.) and Taynton (Oxon.), built the south front of Cornbury House, Oxfordshire, about 1632. His son Valentine, who succeeded to the quarries, built several houses in his own neighbourhood, whilst his grandsons, Thomas and Edward Strong, became masonry contractors on a very large scale after the Great Fire, the former first in Oxfordshire and then in London, the latter principally in London (58), where they apparently found a good market for their Taynton stone. Christopher Kempster, who owned a quarry at Burford (Oxon.), also sent stone to London and became a very large masonry contractor there after the Fire (59). Thomas Wise, junior, who was interested with Thomas Gilbert in the Portland stone quarries in the 1680's, was at the same period and at a later date undertaking large masonry contracts in London (60). When the contract was signed in 1688 by two freemasons, Simon Wise, of Dean (Northts.) and Nicholas Ashly, of Ketton (Rutland), to erect the Chapel at Emmanuel College, Cambridge, they undertook to supply the ashlar from the quarry at Ketton. Whether the quarry was worked by them or not there is nothing to show (61), but we think it not improbable.

If contractors were sometimes associated with tomb-making and sometimes with quarries, there was another association which was possibly even more common in the Middle Ages, namely, that between contractors and master masons. We hesitate to say that the office of master mason on some royal or ecclesiastical building was definitely a stepping stone to the taking of contracts, because we have found cases where, to judge by the available records, a mason took contracts before he can be traced as holding a post as master mason, and it may be that in some cases contracting provided a training ground for master masons. Thus, for example, Henry Yevele, probably the best known mason of the fourteenth century, was paid for substantial contracts in 1358 and 1359, although his earliest official post as master mason or its equivalent was not gained, so far as we can tell, until 1360 (62). Stephen Lote, who in 1400 succeeded Yevele as Disposer of the King's Works at Westminster and the Tower of London, had been party to various contracts in the previous decade (63), when, so far as we are aware, he held no appointment as master mason. In the seventeenth century Joshua Marshall was a contractor in a very large way of business before he became King's Master Mason

(51) *The London Mason in the Seventeenth Century*, p. 21.
(52) *Ibid.*, p. 20.
(53) *Ibid.*, p. 25.
(54) *Ibid.*, p. 35.
(55) Knoop, Jones and Lewis, "Some Building Activities of John, Lord Cobham," *A.Q.C.*, vol. xlv, p. 52.
(56) See Knoop and Jones, "Henry Yevele and his Associates," R.I.B.A. JOURNAL vol. 42, series 3, No. 14, 1935, p. 807.
(57) *Medieval Archives of the University of Oxford* (Oxford Hist. Soc.), vol. II, pp. 291, 292.
(58) See Clutterbuck, *History of Hertford*, vol. I, p. 167 n., where a memorandum on the Strong family by Edward Strong, senior, is printed, and Knoop and Jones, *The London Mason in the Seventeenth Century*, pp. 24 and 43-45.
(59) Knoop and Jones, *ibid.*, p. 45.
(60) Knoop and Jones, *ibid.*, p. 39.
(61) Willis and Clark, vol. II, p. 706.
Simon Wise supplied dressed stone for Clare Hall in 1669 (*ibid.*, vol. I, p. 102 n.), but he was not the building contractor in that case.
(62) "Henry Yevele and his Associates," *loc. cit.*
(63) *Ibid.*

in 1673 (64). On the other hand, in some cases the post of master mason appears definitely to have led to the taking of contracts in connection with the building where the mason was, or had been, master. Thus in 1316 Henry Ellerton, master mason at Caernarvon Castle, undertook a contract to repair part of the town quay (65); in 1346 and 1347 Nicholas de Ailyngton, Prince's Mason, did work by contract for the Black Prince at Kennington (66); in 1489 Robert Stowell, master mason at Westminster Abbey since 1471, entered into an agreement to finish three severies and the arch at the top of the nave of the Abbey for £120 (67); John Wastell, who was master mason at King's College Chapel, Cambridge, in 1508-9, took substantial contracts, amounting to over £2,000, in connection with finishing the building in 1512 and 1513 (68). In 1688 Robert Grumbold, who had been master mason at the erection of Trinity College Library, Cambridge, laid the pavement of that Library by contract (69).

In other cases a mason occupying the post of master at one building took contracts at another. Thus John Lewyn, who was master mason at Durham in 1367-68 (70), entered into a contract in 1378 to build part of Bolton Castle in Wensleydale (71); Henry Yevele, King's Master Mason from 1360 until his death in 1400, possibly contracted in 1371 to build the first cell and to begin the Great Cloister of the London Charterhouse (72); in 1376 he was paid £30 (jointly with William Wintringham) for work at the Savoy (73) and £108 (jointly with Thomas Wrek, mason, of London) in part payment of £486 for a tomb for the late Duchess Blanche at St. Paul's, London (74); in 1379-80 he was paid 100s. for supplying a window for St. Mary's Church, Battersea (75); in 1395 he was paid £20 (jointly with Stephen Lote) as part payment for Archbishop Langham's tomb at Westminster Abbey and about the same time he and Lote entered into an agreement to build a tomb at the Abbey for Anne of Bohemia (76).

Tomb building appears to have provided master masons with possibly more opportunities for substantial contracts than any other type of building. A century before Yevele was erecting tombs we find predecessors of his in Crown and Church appointments undertaking similar contracts. It is not improbable that the erection of crosses or monuments represented the earliest examples of stone work undertaken by contract, but we know of no documentary evidence of agreements for the erection of a tomb before the end of the thirteenth century, though we have previously referred to a statue for a tomb supplied from Purbeck in 1227. By the end of the thirteenth century a tomb, in some cases at least, was an elaborate affair, involving a very substantial amount of masonry apart from statuary. The death of Queen Eleanor in 1290 led to the erection of several tombs and crosses, the payments in respect of some of which have survived (77). For Charing Cross, for example, Richard de Crundale, King's Master Mason, received some £560 (exclusive of payments for materials supplied by him), and his brother Roger some £90 (78). The statues were carved by Alexander of Abingdon, *le Imaginator*.

(64) *The London Mason in the Seventeenth Century*, p. 35.

(65) "Castle Building at Beaumaris and Caernarvon in the Early Fourteenth Century," *A.Q.C.*, vol. xlv, p. 8.

(66) *Black Prince's Registers*, vol. I, pp. 27, 104.

(67) R. B. Rackham, *Nave of Westminster*, p. 41.

(68) Willis and Clark, vol. I, pp. 479-81, 608-14.

(69) *Ibid.*, vol. II, p. 540.

(70) *Durham Account Rolls* (Surtees Soc.), vol. II, p. 571.

(71) The contract is printed in *A.Q.C.*, vol. x, p. 70.

(72) "Henry Yevele and his Associates," *loc. cit.*

(73) P.R.O., Duchy of Lancaster, 28/3/1, m. 3. We have to thank our colleague, Dr. N. B. Lewis, for drawing our attention to this and the following case.

(74) *Ibid.*, m. 4 and *Reg.* II, 1659.

(75) Westminster Abbey Muniments, Infirmarer's Roll, 1379-80. We have to thank Dr. J. F. Nichols for drawing our attention to this case. This, together with the two previous cases, were unknown to us when we wrote our article "Henry Yevele and his Associates," published in the R.I.B.A. JOURNAL in May of last year. The last reference suggests to us that he was Master Mason at Westminster when he took the Battersea contract in 1379-80. Rackham (*op. cit.*, p. 61) is only able to state that he was appointed in 1387 or earlier. We are also in a position, thanks to the courtesy of Mr. P. E. Jones, of the Records Office of the Corporation of the City of London, to supplement our information about Yevele's career as Bridge Warden: from the Bridgemasters' Account Rolls, 1381-1405, it appears that he was Warden continuously from 1381-2 to 1395-6: in the Bridge House Deeds he is mentioned as Warden in 1365 (G. 79), 1368 (G. 9) and 1370 (G. 76) and in a volume of copy deeds called the Large Register he appears as Warden in 1373 (L.R. 29) and 1378 (L.R. 30). Thus he was probably Bridge Warden from 1365, or before, to 1395-6.

(76) The impression produced upon contemporaries by sumptuous tombs may be judged by Adam of Usk's remarks about Richard II: "O deus! quantas millenas marcas circa vane glorie sepulturas, sibi et uxoribus suis inter reges Westmonasterii faciendas, expendidit" (*Chronicon*, Ed. E. M. Thompson, p. 43).

(77) Wardrobe Accounts in P.R.O., *Exch. K.R.* 352/27, 353/1, 353/9, 353/19, used by Joseph Hunter, *Archæologia* XXIX, pp. 167 *folg.* The accounts are a list of payments made between October 1291 and February 1293-4 by the executors of Queen Eleanor.

(78) **Richard de Crundale** apparently succeeded Robert de Beverley as King's Mason about 1280 (Lethaby, *Westminster Abbey and the King's Craftsmen*, p. 174). In September, 1281, he was one of the sureties for Peter de Honilane when the latter was found guilty of walking abroad at night with arms to do mischief and taking reward for beating men (*Cal. Letter Book B.*, pp. 7, 9) and it is possible that Peter was one of his workmen. He signed two Westminster Account Rolls of 1288 and 1289 (*Exch. K.R.* 467/16 and 17). He died in the autumn of 1293.

Michael of Canterbury, King's Mason at the erection of St. Stephen's Chapel, Westminster, in 1292 (79), had a contract for £300 for the erection of the Eleanor Cross in West Cheap and was paid £226 13s. 4d. in respect of it in 1291, 1292 and 1293. John de Bataile, probably the mason who was under-master at Vale Royal Abbey from 1278 until the surviving accounts close in 1280 (80), was partly responsible for the erection of five Eleanor crosses, namely, those at Stony Stratford, Woburn, Dunstable, St. Albans and Northampton (81), for which he received some £430 in all. In these five cases the statues were the work of William of Ireland, who received five marks for each.

Apart from the fact that the sculptors were not responsible for these monuments, the most striking point about these contracts is their size, which will be realised if the amounts involved are compared with the sums of £571, £442 and £511 spent during 1278, 1279 and 1280 on the erection of Vale Royal Abbey, where on the average 135 men were employed on the "direct labour" system and where, during the three years, 35,000 loads of stone were carted from the quarries at Edisbury some four or five miles to the site of the Abbey, an average of some 3,000 loads of stone a month (82).

(ii) The Origins from which Mason-Contractors Rose.

Having endeavoured to show the various avenues by which masons might rise to the position of building contractor, we may now briefly consider the origins of such masons, so far as they can be traced. Not infrequently the term used to describe the contractor is simply "mason" (83) and we are none the wiser as to whether he was a hewer or a layer by origin; on occasion the description is "yeoman" (84), or is even entirely missing from the contract (85). In some cases, the contractors undoubtedly rose from the ranks of "layers" or "roughmasons," which terms may be regarded as equivalent. William Sharnhale, the principal contractor at Cowling Castle about 1380, whom we have previously mentioned, was a case in point. Several Cambridge contractors are described either as layers or as roughmasons, e.g., John Loose, who took small contracts at Peterhouse and Corpus Christi in the 1450's (86); Scott and Perse, who took similar contracts at Trinity College in the 1550's (87) and possibly John Westley, who was responsible for various buildings in the 1630's and 1640's (88). On the other hand, in some documents the contractors are definitely described as "freemasons" (89) and there can be little doubt that in most, if not all, cases where a master mason or a monument or tomb-maker developed into a general masonry contractor such a man was a hewer by origin, even though he may never be so described in any surviving document. Similarly, where a quarrymaster became a building contractor it seems probable that he had had experience of hewing, as much stone was dressed in the quarries in the Middle Ages as well as in more recent times. On the whole we are disposed to think that most contractors rose from the ranks of mason-hewers, though it must be recognised that where the erection of walls was concerned experience in laying or setting would seem to provide a better training for masonry contracting than experience in hewing. So far as we can tell, however, many freemasons or hewers did a certain amount of setting or laying (90), even if only the superior branches of the work, and thus might have the wider experience which would best qualify them for the contracting business.

Perhaps the most useful experience of all for a

(79) Lethaby, *op. cit.*, p. 180.

(80) Knoop and Jones, "The First Three Years of the Building of Vale Royal Abbey," *A.Q.C.*, vol. xliv, p. 19.

(81) An entry in *Exch. K.R.* 352/27 records the payment of £20 to John de Bello and his fellows (*sociis suis*) on account of the cross at Northampton. One of them was Simon de Pabenham.

(82) *A.Q.C.*, vol. xliv, pp. 8, 14, 15. Between October 1291 and October 1292 Master Richard Crundale received over £218 on account of Charing Cross, on which a sum of over £67 was spent in stone and transport during the same period. We cannot be sure that the payments to Master Richard Crundale were all on account of labour; if they were, they may be considered to have been equivalent to the wages of about fifty masons for twelve months.

(83) E.g., Wm. de Helpeston in the Vale Royal Contract of 1359 (*A.Q.C.*, vol. xliv, p. 225), Thomas Crump in the Cowling Castle Contract of 1381 (*A.Q.C.*, vol. xlv, p. 52), Nicholas Typerton in the St. Dunstan Church Contract of 1381 (*A.Q.C.*, vol. xlii, p. 111), Richard de Cracall in the Catterick Church Contract of 1412 (James Raine, *Catterick Church, Yorkshire*, p. 7).

(84) E.g., John Atkinson in the contracts for the Perse and Legge buildings at Caius College, Cambridge, in 1617 and 1618 (Willis and Clark, vol. I, pp. 204, 206).

(85) E.g., from the contract of John Wassyngle, of Hinton, to build the Peterhouse Library at Cambridge in 1431 (*ibid.*, vol. I, p. 72).

(86) *Ibid.*, I, pp. 259, 261.

(87) *Ibid.*, II, pp. 470, 562 n.

(88) *Ibid.*, I., pp. 34, 94, 193, 531 n., II, p. 695. Willis and Clark describe him as Master Mason at Clare Hall; as a bricklayer at Emmanuel. No document quoted appears to give a description.

(89) E.g., John Marwe in the Conesford Quay contract of 1432 (*A.Q.C.*, vol. xxxv, p. 37), William Vertue in a Windsor contract of 1511 (St. J. Hope, vol. II, p. 481), John Shereff, who erected the Great Tower of Trinity College, Cambridge, about 1530 (Willis and Clark, vol. II, p. 454), Ralph Symons and Gilbert Wigge, who built the Second Court of St. John's College, Cambridge, in 1598-1602.

(90) *The Mediaeval Mason*, p. 87.

future mason-contractor was to belong to a family associated with that career. We can trace cases in the Middle Ages of sons following their fathers as masons, and this was probably not at all uncommon, but the only early cases known to us of mason-contractors with what may very probably have been family connections are those of John and William de Helpston, who entered into masonry contracts in Cheshire in 1342 and 1359 (91), and of Thomas Crump, of Maidstone, a late fourteenth-century contractor, who was probably connected with Ralph and Roger Crump and the quarrying industry, as previously mentioned (92). In the seventeenth century we find various families associated with masonry and contracting, especially in London. Reference has already been made to three families of quarrymasters and mason-contractors, the Strongs, of Little Barrington and Taynton (who for at least four generations had such associations) (93), the Kempsters of Burford (94), brothers and sons, and the Wises of Portland (95), father, brother and son. Other cases of family connections with masonry in London in the seventeenth century were those of Thomas Cartwright and his sons Thomas and Joseph (96), Edward Marshall and his son Joshua (97), Nicholas Stone and his son John (98), Thomas Stanton and his nephew William Stanton and his great-nephew Edward Stanton (99), Thomas Gilbert and his sons Thomas and John (100). Of these, the Stones and the Stantons were primarily tomb and monument makers and the Gilberts purveyors of Portland stone and probably quarrymasters. Another seventeenth-century family which had a connection with contracting was that of Grumbold, of whom Robert was the best known. The family is said to have come from Raunds, in Northamptonshire, a place famed for its quarries (101), but nearly all their work which can be traced was done in Cambridge. The first member of the family found there in the seventeenth century was Thomas Grumbold, who was probably the "Grimball the freemason" who, with his man, was paid for work at St. John's College Library in 1625 (102) and who was certainly paid for work at Clare Hall in 1639 and 1640 (103) and at King's College in 1651 (104). He died at Cambridge in 1657 (105). Robert, son of Edward Grumbold, was born at Raunds in 1639, and was probably a relation of Thomas. Whether he learned his trade in the quarries at Raunds or with Thomas Grumbold at Cambridge there is nothing to show. He can first be traced at Cambridge at Clare Hall in 1669 (12 years after Thomas Grumbold's death) when he and a partner named Bradwell, as freemason-contractors, were paid their bill every week from May to November. In 1676 he was master mason at the building of the new Library at Trinity College for which Sir Christopher Wren prepared designs; in 1684 he designed and executed the new hall at Clare Hall and from that time onwards until shortly before his death in 1720 he submitted various schemes and plans in connection with

(91) *A.Q.C.*, vol. xliv, p. 223 n.

(92) "Henry Yevele and his Associates," R.I.B.A. JOURNAL, May 1935, p. 15.

(93) *The London Mason in the Seventeenth Century*, pp. 43, 44, 45.

(94) *Ibid.*, pp. 45, 46.

(95) *Ibid.*, pp. 35, 39, 49.

(96) *Ibid.*, p. 38.

(97) *Ibid.*, pp. 34, 35.

(98) *Ibid.*, pp. 22-24.

(99) *Ibid.*, p. 21.

(100) *Ibid.*, pp. 28, 29.

(101) Willis and Clark, vol. III, p. 532. There were Grumbolds [Gromboles] engaged in masonry in Northamptonshire and Cambridgeshire in the sixteenth century. **William Grumbold**, a "free mason" much employed by Sir Thomas Tresham, entered into a bargain in 1578 to build the market house at Rothwell (*Hist. MSS. Com.*, *Various Collections*, vol. III, pp. xxxiii and 2). Very possibly he was the William Grombold employed on the construction of Fotheringhay Bridge in 1573-74 (*Exch. K.R.* 463/23) and also the "William Grombole master workman and freemason" employed at the end of August and the beginning of September 1593 on the rebuilding of the steeple of St. Mary the Great, Cambridge (J. E. Foster, *Churchwardens' Accounts of St. Mary the Great, Cambridge*, Cambridge Antiquarian Soc., 1905, p. 248. We have to thank our colleague, Professor G. R. Potter, for drawing our attention to this case). He is also described as "the other master workman" to distinguish him from "**Robert Grombole** our master workman freemason," who worked there from August to October 1593, and again, described as "the master mason," from June to September 1594. In August and September 1594, "**John Grombole** freemason and brother of Robert Grombole" also worked there (*ibid.*, pp. 248-261). In 1596 payments were made to "the Grombolds" for their bargain at Lyveden, where they were erecting the so-called New Building for Tresham (*Hist. MSS. Com.*, *Various Collections*, vol. III, pp. xxxv, xlix). "The Grombolds" are also referred to in a letter of Tresham's written in 1604 with reference to bargaining with masons for Lyveden House (*ibid.*, pp. liv, 134). Very possibly "the Grombolds" of 1596 and 1604 were William Grombold [Grombole] of 1578 and 1593 and Robert Grombole of 1593-94, or, perhaps more likely, Robert Grombole of 1593-94 and John Grombole of 1594, all of whom may well have been relations of the Thomas and Robert Grumbold associated with Cambridge in the seventeenth century. Thomas Grymbold, lodgeman, who worked at Nonsuch Palace in 1538 (*Exch, K.R.* 477/12), may also have been a relation. That the first Robert Grombole did not belong to Cambridge in 1593 is shown by the fact that he was given a reward of 2s. 6d. on 20 October "when he went home at the end of the year" (Foster, *op. cit.*, p. 252).

(102) Willis and Clark, vol. II, p. 268.

(103) *Ibid.*, vol. I, pp. 95, 96.

(104) *Ibid.*, vol. I, p. 513.

(105) *Ibid.*, vol. III, p. 533.

college and university buildings, several of which designs he executed as mason-contractor (106).

(iii) The Character of the Contracts into which Masons Entered.

Medieval contracts varied considerably in respect of what the mason-contractor had to provide. Where a mason undertook to make a vault or build a wall by task work in connection with some big building operation the presumption is that he agreed to supply workmanship only, and that the stone was provided by his employers (107). The same was true of some later contracts. At the erection of the Great Tower of Trinity College, Cambridge, which began in 1528-29, the contract for the masonry was let to John Shereff, freemason, who was to find the masons' wages, the materials being found by the College (108). The masonry contracts for the rebuilding of St. Paul's Cathedral after the Great Fire provided for workmanship only, but with that great exception most London masonry contracts of that period appear to have required the mason to provide materials as well as workmanship (109). The provision of materials by the mason was not an uncommon condition of earlier contracts, and the transport of materials might also be at his charge, a particularly serious matter, as it might easily cost much more than the stone. Thus, for example, at Vale Royal Abbey in 1278-80 the quarriers' wages amounted to £104 and the carters' wages to £347 for transporting the stone some four or five miles from the quarry to the site of the Abbey. In the case of Eton College, in the middle of the fifteenth century, Huddleston stone, worth about 12d. per load at the quarry in Yorkshire, cost about 6s. 6d. per load to transport to Eton by cart, ship and barge. Even stone from Merstham, which was relatively near, worth 20d. per load at the quarry, cost 2s. 8d. per load to convey to Eton (110).

It is possible to distinguish four types of contract according to what the contractor undertook to provide :—

(i) Workmanship only.
(ii) Workmanship and stone, but not carriage.
(iii) Workmanship and carriage, but not stone.
(iv) Workmanship, stone and carriage.

We have already given examples of the first type of contract. The second can be illustrated by Rengwyne's contract to build a Hall at Hammes in 1321 (111) and Lewyn's contract to erect part of Bolton Castle in Wensleydale in 1378 (112). In each of these cases the mason was to find his own stone and the employer was to provide carriage. The third is illustrated by the agreement entered into in 1398 by John de Middleton with the Prior of Durham to complete a certain section of building at a price of 10 marks per rod. The price did not cover stone and lime but included scaffolding, iron for tools, burning of the lime and carriage, the cost of carriage being limited, however, by the Prior's obligation to find stone and lime quarries within three miles of Durham (113). In 1401 there was a contract in similar terms with Peter Dryng, mason (114). The fourth type is illustrated by Thomas Crump's contract to erect the Great Gateway of Cowling Castle in 1381 in conjunction with his contract to supply stone and transport (115) and John Marwe's contract to construct Conesford Quay in 1432 (116).

Mediæval contracts varied not only in respect of what the mason-contractor had to provide but also in the methods of payment, which might be either by the great or by measure. Work by the great (*in grosso*, as it was called in the Middle Ages) meant a contract similar to that of the two freemasons Symons and Wigge, who in 1598 for a sum of £3,400 undertook in four years to build the second court of St. John's College, Cambridge (117). John Marwe's contract at Norwich in 1432 was of this character, as he undertook to rebuild the quay at Conesford for £53 6s. 8d. William Horewode's

(106) *Ibid.*, vol. III, p. 533. We have found two references to a **Robert Grumbold** outside Cambridge. At the General Search in London, conducted by the Masons' Company in April, 1678, under the heading " With Mr. Storey," we find " William Grumball apprentice to Robert Grumball at Mr. Norris " (*The London Mason in the Seventeenth Century*, p. 69) which implies that a Robert Grumball was in London at that date, but we should not like positively to assert that he was our Robert Grumbold from Cambridge, though that is not impossible as trade restrictions had been removed in London after the Great Fire and the only reference we have found to him at Cambridge that year is that he was paid 50s. for superintending work in the Regent House (Willis and Clark, vol. III, p. 23 n.). At Ely Cathedral in 1699 the building contractor was Robert Grumbold (Ely Chapter Order Book, November 25 1699, p. 229, quoted by W. D. Caröe, *Sir Christopher Wren and Tom Tower, Oxford*, p. 19) and this, we have no doubt, was our man.

(107) This apparently was the case with John Martyn and John Wylot at Windsor in the 1360's, as the Accounts which show large payments to them for task work also show much larger payments to other persons for the purchase of stone (St. J. Hope, vol. I, p. 187).

(108) Willis and Clark, vol. II, pp. 453-4.

(109) *The London Mason in the Seventeenth Century*, p. 56.

(110) *The Mediæval Mason*, pp. 50, 51.

(111) *Archæological Journal*, vol. XXIV, pp. 56-8.

(112) *A.Q.C.*, vol. x, p. 70.

(113) *Hist. Dunelm. Scriptores Tres* (Surtees Society), p. clxxx.

(114) *Ibid.*, p. clxxxvii.

(115) *A.Q.C.*, vol. xlv, p. 52.

(116) *A.Q.C.*, vol. xxxv, p. 37.

(117) Willis and Clark, vol. II, p. 249.

contract to build Fotheringhay Church in 1434 was in gross so far as finding all workmanship for £300 was concerned. The disadvantage was that the contractors, if the work was new or unfamiliar to them, might, through inability in computation or perhaps through eagerness to secure the contract, undertake more than they could profitably perform at the agreed price, and then, as Wren remarks, "When they begin to find it, they shuffle and slight the work to save themselves" (118). Wren considered working by measure the best, that is, where the contractor is not paid a fixed sum for the whole operation but is paid an agreed price for each rod or other unit of work done. Various mediæval contracts appear to have been by measure. John Lewyn was to receive 100s. per perch at Bolton Castle, *plus* a payment of 50 marks. Both Thomas Crump and William Sharnhale appear to have worked by measure at Cowling Castle in 1381, as their work was in each case measured by Henry Yevele (119). In London after the Great Fire masonry contracts were commonly by measure (120).

The contract system, so far as masonry work was concerned, appears to have been firmly established in London by the last decades of the seventeenth century, though in the earlier part of the century cases of the direct labour system were still to be found there (121). For the provinces, our information is too slight to permit of generalisation. Sir Thomas Tresham, who did a good deal of building in Northamptonshire in the late sixteenth and early seventeenth centuries, sometimes employed contractors and at other times made use of the direct labour system (122). At Oxford, in 1610, Wadham College was being erected by the direct labour system (123) and Merton College was being extended by mason-contractors (124). At Cambridge, in the late seventeenth and early eighteenth centuries, Robert Grumbold's services as mason-contractor were greatly in demand (125). Early in the eighteenth century the Edward Strongs, father and son, were the masonry contractors at Blenheim Palace (126), but we cannot say how rapidly the direct labour system died out. We have found an example of it as late as 1784, when it was used at the erection of the Langcliffe Cotton Mill at Settle in the West Riding (127), but we are disposed to think that by that date it was very unusual.

(118) Wren's letter of 25 June 1681 to Bishop Fell, printed in W. D. Caröe, *Sir Christopher Wren and Tom Tower, Oxford*, p. 27.
(119) *A.Q.C.*, vol. xlv, p. 52, and *Arch. Cant.*, vol. ii, p. 98.
(120) *The London Mason in the Seventeenth Century*, p. 56.
(121) *Ibid.*
(122) *Hist. MSS. Com., Various*, vol. III, pp. xxxiii *folg.*
(123) T. G. Jackson, *Wadham College, Oxford*, pp. 29 *folg.*
(124) T. W. Hanson, "Halifax Builders in Oxford," *Trans. Halifax Antiquarian Society*, 1928.
(125) Willis and Clark, *passim.*
(126) *The London Mason in the Seventeenth Century*, p. 45.
(127) Brayshaw and Robinson, *History of Giggleswick Parish*, p. 209.

INAUGURAL EXHIBITION OF THE R.I.B.A. CAMERA CLUB

The provisional committee, appointed by the special general meeting held on 27 July to consider the formation of an R.I.B.A. Camera Club, has now drawn up a suggested constitution for submission to the Social Committee and Council. Further particulars regarding membership of the club will be announced in the JOURNAL as soon as possible.

In the meantime, an Inaugural Exhibition will be held in November, to which all members, students and probationers of the R.I.B.A. and members of the Allied Societies are invited to send prints.

A general meeting of members interested will be held at 8 p.m. on Wednesday, 18 November, at which the exhibition will be opened, and it will remain open until Saturday, 28 November.

The primary purpose of this exhibition is to arouse interest in the club and to get into touch with all members interested in photography. The provisional committee wish to make it quite clear that this particular exhibition is not competitive, inasmuch as no awards will be made, and there will be no entrance fees.

The following are the conditions for the submission of prints :—

1. EXHIBITORS : All members, students and probationers of the R.I.B.A. and members of Allied Societies are entitled to submit prints.
2. CLASSES : I. Architecture, including detail—(*a*) Historic ; (*b*) Modern. II. Pictorial. III. Portraiture, including Figure Studies. IV. Archæological. V. Scientific, including Building Processes.
3. MOUNTING : Prints to be mounted on white or light-coloured mounts, the minimum size of the mounts to be 12 in. by 8 in., and to be unframed.

   A series of prints dealing with one subject may be mounted on the same mount.
4. TITLING, ETC. : Each print to bear on the back of the mount the following particulars :—*a*. Class, *b*. Title, *c*. Name and address of exhibitor, *d*. Type and make of camera, *e*. Any further relevant particulars which the exhibitor may wish to give.
5. DESPATCH : All prints to be sent to the Secretary, R.I.B.A., 66 Portland Place, W.1, labelled "R.I.B.A. Camera Club Exhibition," by *not later than Wednesday, 11 November.*
6. GENERAL : No exhibitor may submit more than 12 prints, from which the Committee will make a selection according to the space available.

   All prints must have been taken by the exhibitor, but need not have been developed or printed by him.

   Although all reasonable care will be taken, the Committee cannot be responsible for any harm which may come to any prints submitted to them.

THE TRANSMISSION OF LIGHT THROUGH WINDOW GLASS

A New Form of Daylight Measuring Diagram for Glazed Openings

By PERCY J. WALDRAM, F.S.I.

The Town and Country Planning Act, 1932, requires local authorities, when approving schemes for new buildings or for rebuilding in towns, to preserve amenities of light and air to all neighbouring buildings affected, and not merely to those whose owners possess prescriptive rights.

It is therefore anticipated that in the near future a demand will arise for methods less tedious than those now in use for ascertaining whether any building affected will be better or worse off than under the criterion of amenity prescribed for its locality, probably on the lines suggested by the Science Standing Committee in the JOURNAL of 7 September 1935.

The writer has therefore prepared and hopes shortly to publish a series of graphs and tables to give the daylight factor value of convenient areas of glass (*e.g.*, square feet) through which unobstructed sky is visible at varying distances, heights and directions.

In order that the basis of these data, and of any simple rules for fenestration which may be based upon them, may be as immune as possible from theoretical criticism, he has considered it desirable that they should be based upon such a modification of the ordinary daylight measuring diagram as would incorporate the difference between glazed and unglazed window openings.

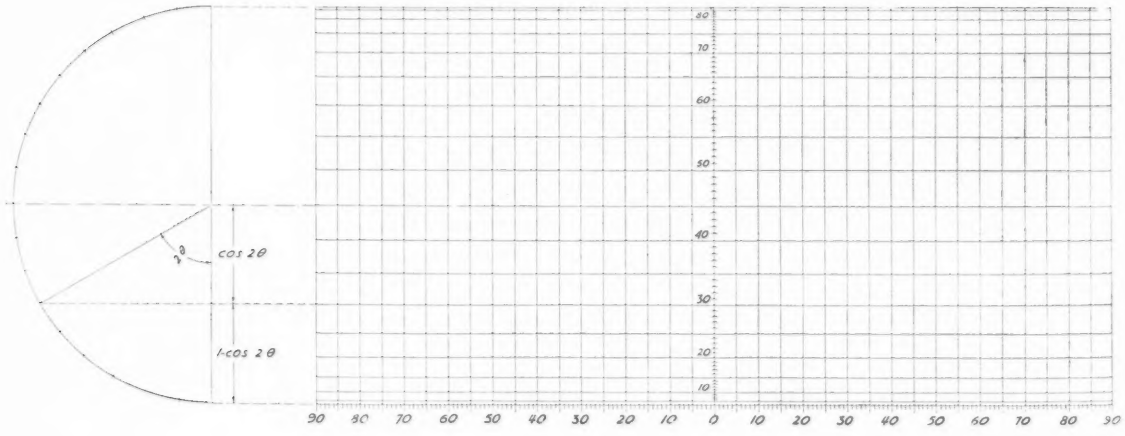
The report of the Department of Scientific and Industrial Research on the penetration of daylight and sunlight into buildings* recommends for the measurement of illumination on a horizontal plane through windows the use of the measuring diagram published by the writer and his son (J. M. Waldram) in 1923 (Fig. 1).

From time to time this diagram has been criticised on the ground that it is only true for unglazed openings, and makes no allowance for the fact that at angles of incidence of more than about 40° with the normal to the plane of a window the loss of light in its passage through ordinary glass can be material.

Up to the present no attempt has been made in this country to remedy this theoretical defect for the reason that it can only have any materiality under conditions which are too rare to justify the sacrifice of simplicity in a diagram which is almost absurdly easy to construct and, what is more important, because of the consequent loss of convenience in use. It was also

* Ill. Research. Technical Paper No. 7 2nd edition H.M. Stationery Office.

Fig. 1



considered that to be theoretically consistent a slightly different adjustment ought, strictly speaking, to be made for every different kind of window glass. Fortunately this proves to be unnecessary.

Light from lateral angles of 40° and over can certainly only penetrate to the front parts of normal rooms, and it is not in the front but the back parts of rooms that trouble usually occurs with regard to inadequacy of natural light.

If, therefore, severely lateral light can only reach those parts of rooms which normally have plenty without it, the precise extent of the loss which it may experience in passing through glass would appear to be obviously immaterial. In consequence it would seem at first sight that there can be little or no practical need for any refinement at all other than a general percentage reduction from all results to allow for slightly dirty glass.

But loss of light received from lateral directions more or less horizontally is not the whole story; light also suffers a loss due to vertical incidence. When the only direct light, practically the only useful light, left to an interior comes from the strip of sky visible over the top of any high obstruction the extent to which that narrow but invaluable belt of light may be diminished by having to pass through glass at steep angles of incidence is not necessarily unimportant.

It is therefore desirable that means should be available to test whether in any given case this loss is or is not material and the most convenient means would be to have some alternative form of Fig. 1 which automatically corrects for the losses, whether they be trivial or severe, at all angles of incidence.

If the loss of light in its passage through glass were merely a matter of absorption it would be quite a simple correction, varying according to the thickness of glass traversed, which thickness would vary inversely with the cosine of the angle of incidence (I) Fig. 2, *i.e.*, with the relation of AB to AC. Unfortunately the nature of the loss is by no means so simple. By far the greatest part of the loss is by external reflection from the incident surface and by reflections and counter-reflections between the incident and the emergent surfaces in the thickness of the glass.

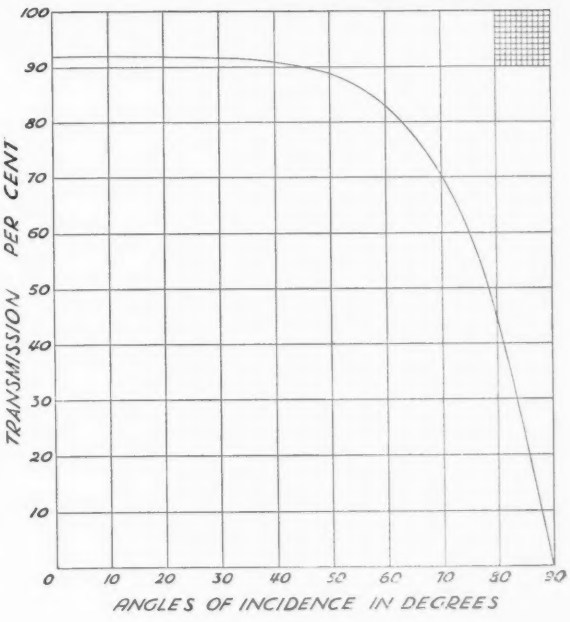


FIG: 3

The extremely small amount of loss occasioned by absorption proper, at least in glass comparable in transparency with glacier ice, can be realised from the winding tunnels which are cut into the snouts of Swiss glaciers to enable summer tourists to stand in the chamber at the end of the tunnel in what appears to be

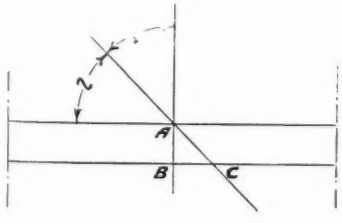


FIG.2

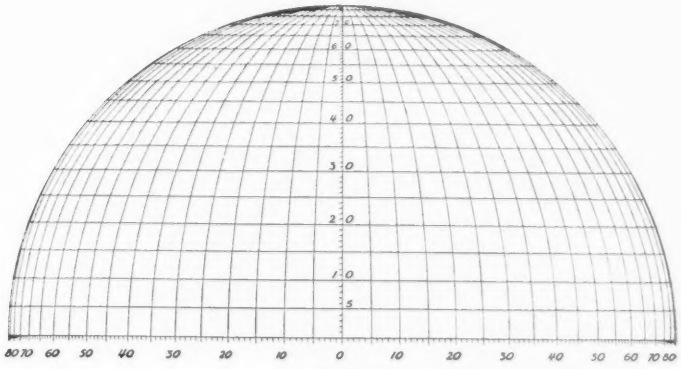


FIG: 4

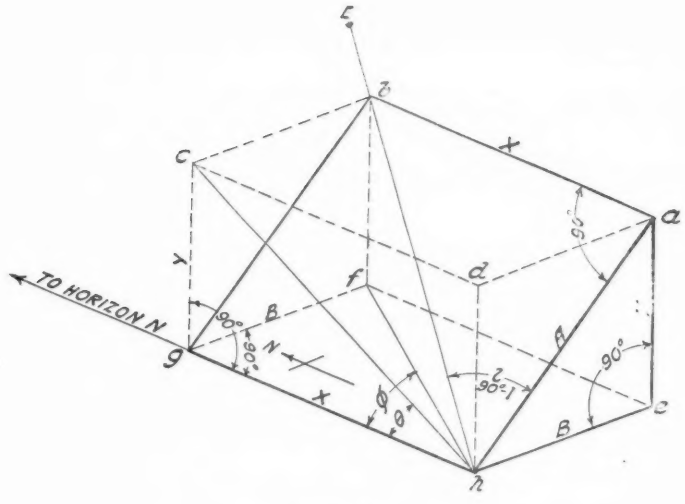


FIG. 5

broad daylight, although surrounded by some 30 to 50 metres of solid ice in all directions. Through the ice walls of the chamber or the tunnel one can also look into the body of the solid ice 100 to 150 feet below the surface and note the imprisoned air bubbles, etc., as clearly as in the blocks of ice on a fishmonger's slab.

The loss of light in its passage through glass, *i.e.*, the difference between the incident and emergent light at varying angles of incidence is seen in Fig. 3, calculated from Fresnel's formula by the Public Health Service of the U.S. Treasury Dept.* for glass 3 mm. thick, having an absorption factor of 0.014. The writer has had this tested by direct measurement and found it to be typical of ordinary window glasses.

In order to apply this correction to the measuring diagram, Fig. 1, for unglazed openings, it is necessary to be able to ascertain the true angle of incidence of light from any given element of sky.

For example, let Fig. 4 represent the quartersphere of sky visible from a window facing North, conveniently sub-divided by a web of co-ordinates of angles of elevation and bearing. At what angle of incidence would light from a small element of sky (E) 40° above the horizon and 35° East impinge on the glass?

The following solution of this rather tiresome three-dimensional problem will doubtless appeal by its simplicity. The basic principle of it was suggested by the writer's son (C. H. Waldram).

Imagine a cube *abcdefgh* (Fig. 5), of such proportions that the angle between the diagonal *hc* and the base *hg* of one vertical side *dcgh* is equal to the angle θ of elevation of the element of sky under consideration, in this case 40°, and the angle ϕ between the diagonal *hf* and the side *hg* of the base *efgh* represents the angle of bearing, in this case 35°.

Imagine the base *hg* of the vertical side *hgcd* to be directed to the horizon due North, then the diagonal *hb* will be on the line joining the element of sky E with the surface of the glass *adhe*, and the angle i is the complement of the required angle of incidence (I).

To obtain this trigonometrically, imagine the upper half of the cube represented by dotted lines cut away to leave the prism *abghef*, then i is the angle between the diagonal of the side of the cube representing the glass *adhe*, and the diagonal of the base *abgh* of the prism.

The trigonometrical solution is now simple.

$$\frac{Y}{X} = \tan\theta \qquad Y = X\tan\theta$$

$$\frac{B}{X} = \tan\phi \qquad B = X\tan\phi$$

$$A^2 = B^2 + Y^2 \therefore A = \sqrt{B^2 + Y^2}$$

$$= \sqrt{X^2\tan^2\phi + X^2\tan^2\theta}$$

$$= X\sqrt{\tan^2\phi + \tan^2\theta}$$

$$\text{Tan } i = \frac{X}{A} = \frac{X}{X\sqrt{\tan^2\phi + \tan^2\theta}}$$

$$\text{Tan } i = \frac{1}{\sqrt{\tan^2\phi + \tan^2\theta}}$$

For the point E under consideration

Tan θ = Tan 40° = 0.8391, Tan^2 θ = 0.70409

Tan ϕ = Tan 35° = 0.7002, Tan^2 ϕ = 0.49028

$$\text{Tan } i = \frac{1}{\sqrt{1.19437}} = \frac{1}{1.09} = .918$$

or $i = 42\frac{1}{2}°$, the angle of incidence (I) being 90° — 42½° or 47½°.

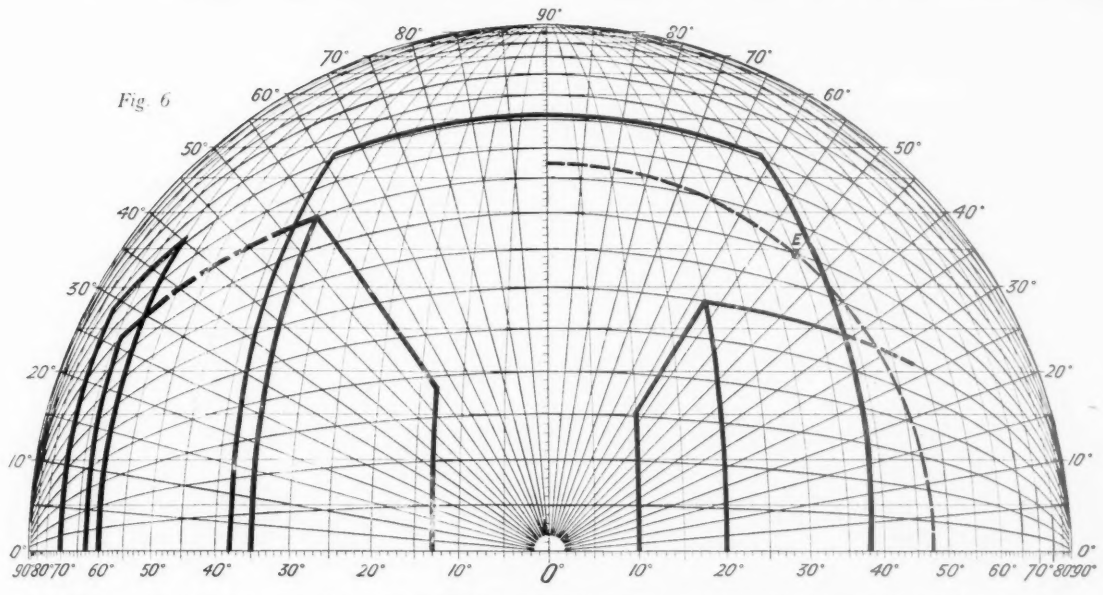
But there is an even more simple graphic solution which avoids all calculation.

Assume that the small element of sky E is situated somewhere on the periphery of the circular base of a cone, the apex of which is at the point where light from E is incident upon the glass, the axis of the cone being at right angles to the glass.

Then all other points on the periphery of the circular base of the cone will subtend the same angle of incidence at the axis.

* Public Health Bulletin No. 218. Washington p. 43.

Fig. 6



DROOP LINES ON ELEVATION OF QUARTER SPHERE PROJECTED HORIZONTALLY ON TO VERTICAL PLANE

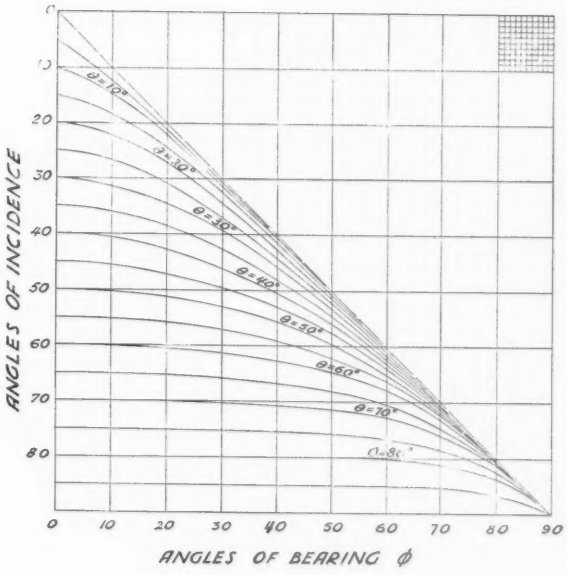
Fig. 6, reproduced from Technical Paper No. 7, represents the quarter sphere of sky shown in Fig. 1, but with the addition of certain guiding lines which have been found useful in setting out projections. The elliptical drooping lines give the true angles of elevation of points displaced laterally right or left of the central axis. For example, the centre of the horizontal head of the window which has been projected on to the diagram subtends an angle of 56°, but at 38° to the right or left this elevation of the head at the corner of the window has dropped to about 49°.

Presume also that the apex of the imaginary cone is at the centre of the diagram and that part of the periphery of its base is indicated by the dotted line quadrant passing through a point E 35° to the right of the central axis and 40° above the horizon.

If it also be presumed that the centre line of the diagram bears due North then the point E will be 35° East. The angle of incidence of E can therefore be carried round along the periphery of the imaginary cone, *i.e.*, along the dotted quadrant until it reaches either the centre line or the base line of the diagram where the angle of incidence can be read off direct as $47\frac{1}{2}°$, the same result as was obtained by calculation.

The true angle of incidence of light from any point in the quartersphere of sky opposite any window can similarly be obtained either by calculation or geometry and tabulated or indicated on a graph, as Fig. 7.

Fig. 7



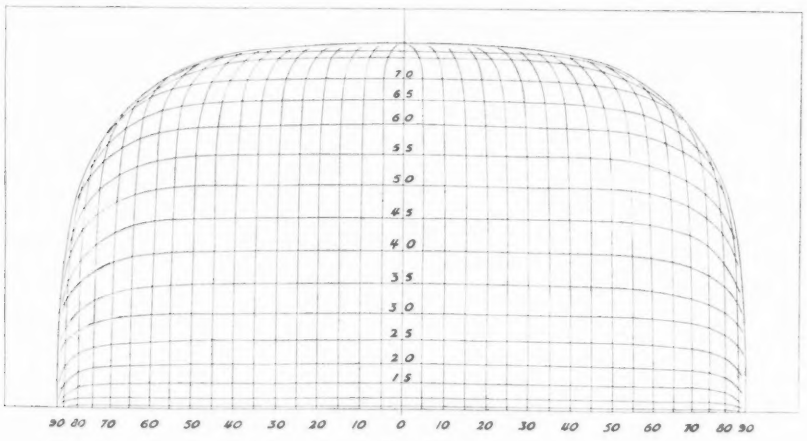


Fig. 8

The next problem which arises is as to how the rectangular webs of angular co-ordinates Fig. 1 which has been duly adjusted from Fig. 4 to represent equal lighting capacity all over through unglazed openings, can further be corrected to represent equal lighting capacity all over through glazed openings, *i.e.*, making due allowance for the losses indicated in Fig. 3.

The area enclosed by any figure such as any one of the quadrilaterals of Fig. 1, can be reduced to any given proportion of the original size in two ways :

(*a*) by reducing all its dimensions, *i.e.*, altering its scale ;

(*b*) by reducing one of its leading dimensions.

For example, if it be desired to reduce the area of a rectangle 10′ 0″ × 12′ 0″ down to 64 per cent. of its original area of 120 sq. ft., or to 120 × .64 = 76.8 sq. ft., this can be effected by reducing either of its dimensions by 64 per cent., or by reducing the scale, *i.e.*, reducing both dimensions of the rectangle in the same proportion. The first operation is easy—

$$(10 \times .64) \times 12 = 6.4 \times 12 = 76.8.$$

or $10 \times (12 \times .64) = 10 \times 7.68 = 76.8.$

It can be shown that the necessary reduction of scale is represented by the formula $x = 10\sqrt{y}$ when x = the percentage reduction of all dimensions which will effect the desired percentage reduction y of area.

Thus if $y = 64$ per cent, $x = 10\sqrt{64}\%$
$= 80\%$.

or $(10 \times .8) \times (12 \times .8) = 8 \times 9.6 = 76.8$ sq. ft.

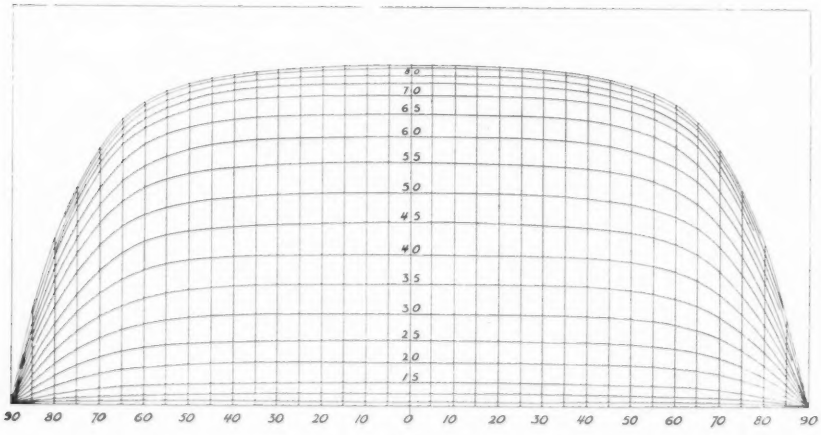


Fig. 9

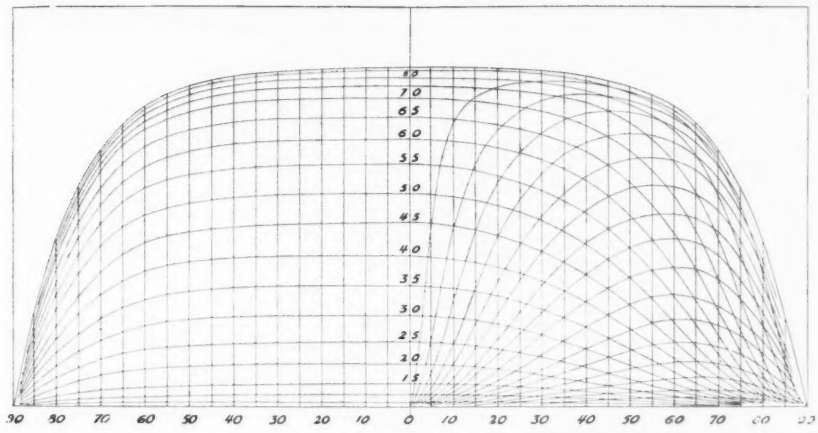


Fig. 10

A reduction of scale of the rectangles comprising Fig. 1 such as would correct for the losses shown in Fig. 3 would result in a diagram of the form shown in Fig. 8. But anyone experienced in daylight calculations with the help of Fig. 1 will appreciate that the alteration of the straight vertical lines on Fig. 1 to curves represents a considerable addition to the labour of setting up diagrams of windows and of what can be seen through them, whether sky or obstruction. The curving of the horizontal lines is immaterial because the projection of horizontal lines such as window heads have to follow curved "droop lines" in any case.

Obviously, therefore, it will be preferable to confine the necessary correction to vertical dimensions only, as in Fig. 9. This is shown complete with droop lines in Fig. 10.

SMOKE ABATEMENT

The Science Standing Committee have made arrangements with the National Smoke Abatement Society for a meeting, at which Members and Students of the R.I.B.A., the Allied Societies, and the Architectural Association are cordially invited to be present, to be held at the Science Museum, South Kensington, on Monday, 26 October, in connection with the Smoke Abatement Exhibition at the Museum.

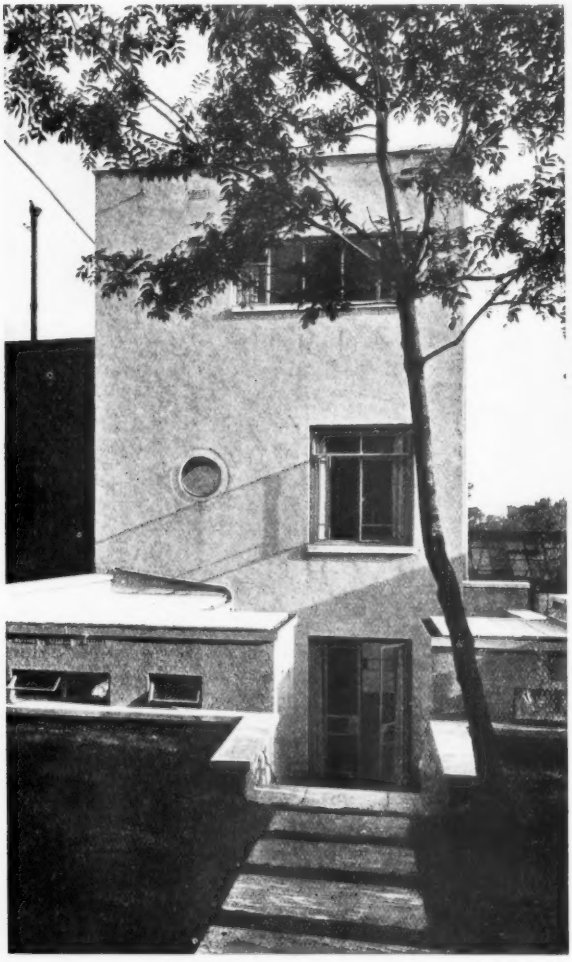
The Chair will be taken by Mr. Thomas E. Scott [*F.*], Chairman of the Science Standing Committee in the Session 1935-1936, at 3 p.m., when a paper on "The Possibilities of Eliminating Open Coal Fires by Legislation in (*a*) Offices, and (*b*) Domestic Buildings," will be read in collaboration by Miss Marion Fitzgerald, Mr. Charles Gandy and Mr. Arnold Marsh.

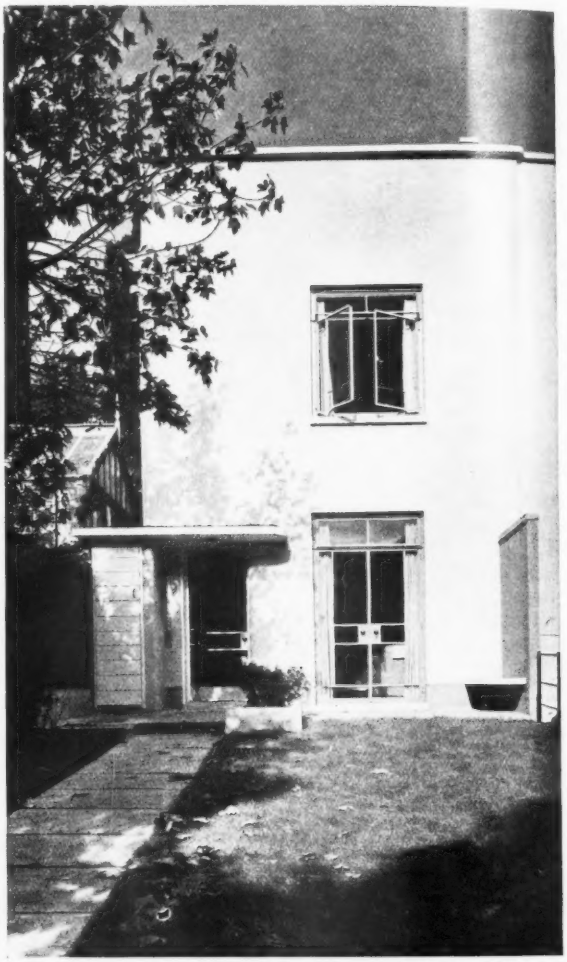
Miss Fitzgerald is a member, and Mr. Gandy the Chairman, of the Executive Committee of the National Smoke Abatement Society; Mr. Marsh is the General Secretary of the Society.

The paper will be followed by a discussion to be opened by Mr. P. J. Waldram, F.S.I. [*L.*], and Mr. A. H. Barnes [*F.*], Vice-Chairman of the Science Standing Committee. The following bodies have been invited to appoint representatives to take part in the discussion: The Royal Sanitary Institute; the Chartered Surveyors' Institution; the Coal Utilisation Council; the Institute of Builders; the National Federation of Building Trades Employers; the Institution of Municipal and County Engineers; the School of Hygiene and Tropical Medicine; the Department of Scientific and Industrial Research; the Institution of Heating and Ventilating Engineers; the Coal Merchants' Federation of Great Britain.

No. 13 DOWNSHIRE HILL HAMPSTEAD, N.W.3

Architects :
M. J. H. Bunney, M.A.(Oxon.), A.A. Dip., [A.]
Charlotte Bunney, A.A. Dip. [A.]

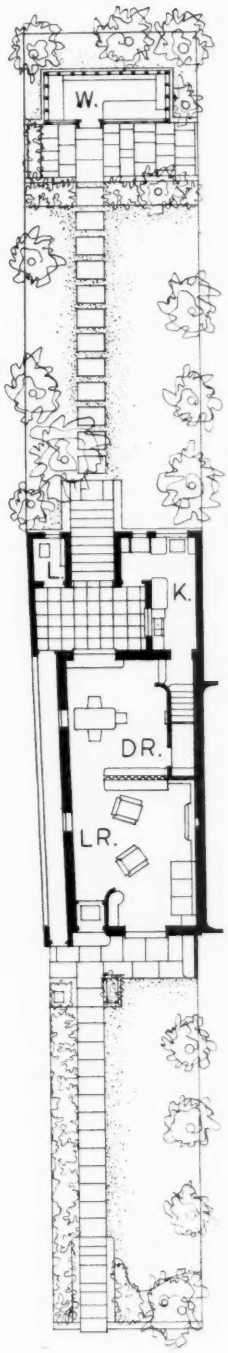




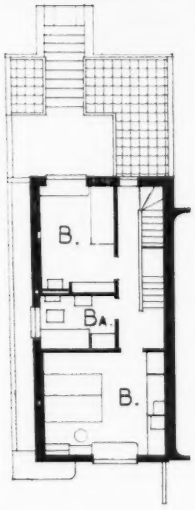
Above is the entrance front, to the left the garden front. The brick walls are finished with cement rendering of pale terra-cotta colour

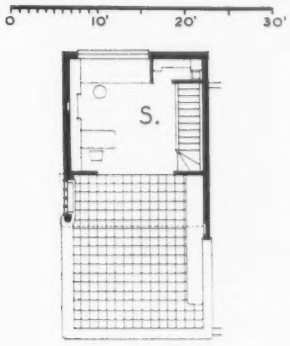
Though small, this house has several points of interest applicable to domestic design generally. It has been built by two architects, who are husband and wife, for their own use as dwelling and office. The house is the result of very close study of requirements.

The narrow site, only 17 feet wide, was originally occupied by a house of late Regency date which was past reconditioning. The new house consists of an open ground floor with the stairs rising from a corner. The kitchen is in a low back addition. On the first floor are a large and a small bedroom and a bathroom. The top floor is partially occupied by the office-studio, which opens on to a roof terrace.



The living room looking towards the front entrance. Reference to plans: L.R., Living Room. D.R., Dining Room. K., Kitchen. L., Lavatory. B., Bedroom. Ba., Bathroom. S., Studio. W., Workshop.

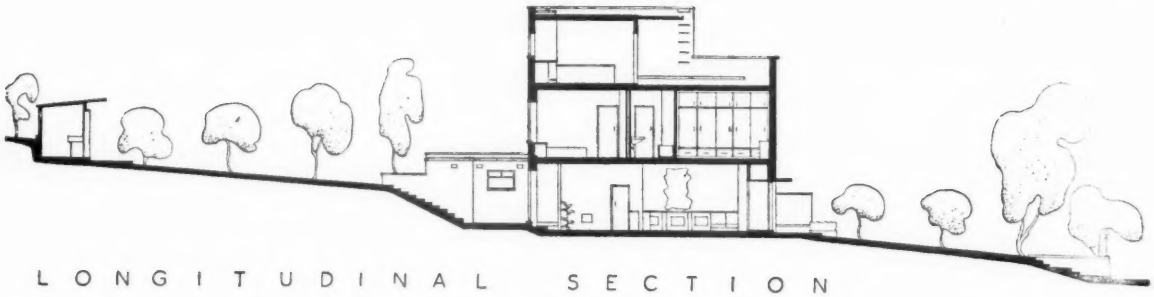




The living room is fitted with what may be described as units of movable built-in furniture. These comprise a sideboard, a settee, a radiogram and a bookcase. They have been designed to occupy three set arrangements, one for summer, one for winter and one for parties. Two of these arrangements are shown in the diagrams on the next page.

The bedrooms are simply furnished, but the built-in clothes fittings are very fully worked out. The same study of detail requirements is observable in the kitchen, of which a plan and section are given on page 1082.

On the top floor the studio is fitted as a drawing office with a built-in plan chest, document files and cupboards. One end of the table slides in a bronze channel on the wall fitting so that its position can be adjusted. In a corner is a small fitted photographic dark room. The accordion glazed screen giving access to the flat roof is protected by a deep canopy. It is

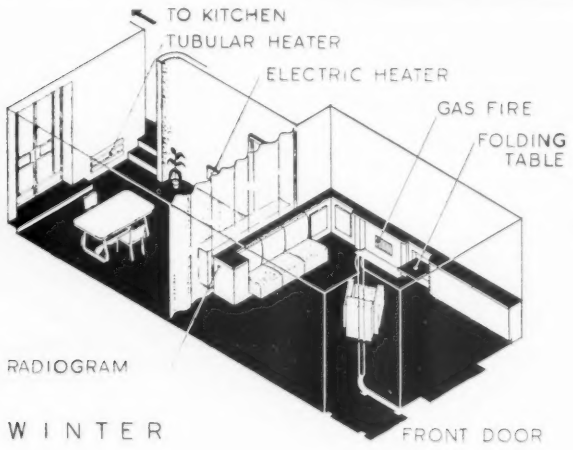


LONGITUDINAL SECTION

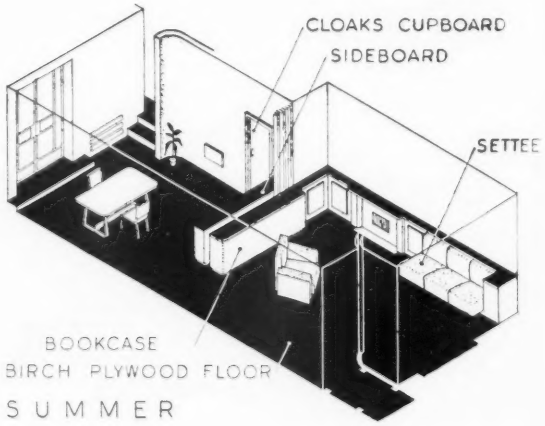
fixed to structural steel members in the floor and roof structure so as to prevent distortion that might result from deflection of the floor.

The structure consists of 14-inch brick walls finished with coloured cement rendering of a slightly terra-cotta shade. The roof and floors are of ordinary joist construction. The roofs are insulated with three layers of ½-inch wallboard, one below and two above, waterproofed with three-ply bituminous sheeting, the terrace being

The living room (to the right) has units of furniture which can be placed in three set positions, two of which are shown in the diagrams below



WINTER



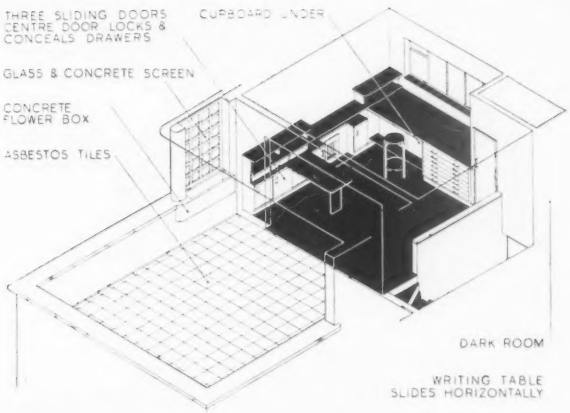
SUMMER

surfaced with asbestos-cement tiles. The projecting canopy is covered with zinc.

Decoration throughout is mainly in light tones, with strong contrasting colours. The living room is floored with birch plywood squares and the furniture is of birch; a free design is to be painted above the fireplace. The windows are of steel to special designs. Heating is by gas and electric fires and there is a battery of elliptical tubular heaters at the foot of the stairs. Gas water heaters are fixed in the bathroom and kitchen and there is an electric heater in the linen cupboard.

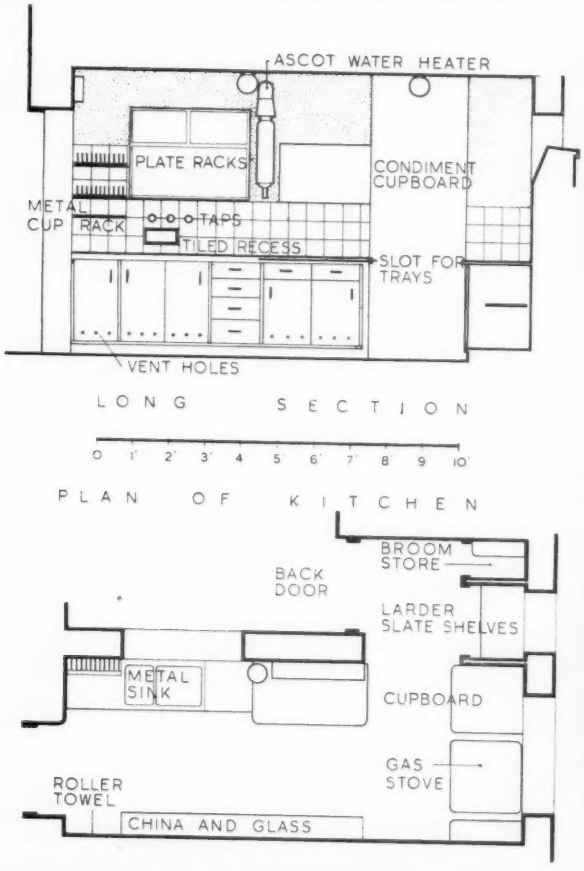
The meters are grouped above a false ceiling in the entrance lobby. The ceiling is designed as two hinged flaps, falling downwards; inspectors can read the meters without entering the house. The letter box was designed to admit a copy of the R.I.B.A. JOURNAL.

The contract price, including demolition of the old house, the built-in fittings in the studio and kitchen and the bedroom cupboards was £1,250.



ISOMETRIC VIEW OF STUDIO AND TERRACE

Two photographs and an isometric view of the studio and roof terrace. The former is very fully fitted as an architect's office with built-in equipment. The floor is heavy cork carpet with a loose rug.



Above: The kitchen. A careful piece of fitting in a narrow space. Beyond the stainless steel twin sink is a hardwood board for chopping and a linoleum-covered table. The rail for cloths above the tubular heater should be noted

The larger bedroom has one wall lined with elaborately fitted cupboards

REVIEW OF CONSTRUCTION AND MATERIALS

This series is compiled from all sources contributing technical information of use to architects. These sources are principally the many research bodies, both official and industrial, individual experts and the R.I.B.A. Science Standing Committee. Every effort is made to ensure that the information given shall be as accurate and authoritative as possible. Questions are invited from readers on matters covered by this section; they should be addressed to the Technical Editor. The following are addresses and telephone numbers which are likely to be of use to those members seeking technical information. There are many other bodies dealing with specialised branches of research whose addresses can be obtained from the Technical Editor. We would remind readers that these bodies exist for the service of Architects and the Building Industry and are always pleased to answer enquiries.

The Director, The Building Research Station, Garston, Nr. Watford, Herts. Telegrams: "Research Phone Watford." Office hours, 9.30 to 5.30. Saturdays 9 to 12.30.

The Director, The Forest Products Research Laboratory, Princes Risborough, Bucks. Telephone: Princes Risborough 101. Telegrams: "Timberlab Princes Risborough." Office hours, 9.15 to 5.30. Saturdays 9.15 to 12.

The Director, The British Standards Institution, 28 Victoria Street, London, S.W.1. Telephone: Victoria 3127 and 3128. Telegrams: "Standards Sowest London." Office hours, 9.30 to 5. Saturdays 9.30 to 12.30.

The Technical Manager, The Building Centre Ltd., 158 New Bond Street, London, W.1. Telephone: Regent 2701, 2705. Office hours, 10 to 6. Saturdays 10 to 1.

THE BUILDING EXHIBITION

The Building Exhibition fulfils for architects three major purposes. It allows them to see under one roof the products and activities of the material supply section of the building industry. It is often overlooked that the present high degree of technical skill—possibly the highest in the world—of the British building industry is in no small measure due to the many firms, some of which are family concerns of long standing, who continue to give reliable service and to maintain quality in their products.

The second is to establish personal relationships with the principals or representatives of the firms whose products a particular architect is accustomed to use. These contacts often make easier the running of jobs, avoid or remove possible sources of misunderstanding, and lead to useful exchange of points of view. Moreover, the architect by discussing his requirements with the manufacturer enhances the service which the latter can give.

The third function is that new developments, materials and technical devices are brought to the notice of architects. A short survey of a number of such "news items" from the recently concluded exhibition is given below. The selection of items has not been easy and is somewhat arbitrary. Generally speaking, they have been introduced within the last two years, that is, since the previous exhibition. There will inevitably be omissions.

BRICKS

On the whole the shape and size of the building brick has remained constant not only for many generations, but almost throughout the world. At the last exhibition a rebated brick was shown which gave the appearance of an exceptionally thick mortar joint, such as has become popular in Holland and Sweden. This year a rebated brick (Fig. 1) was shown by the Marston Valley Brick Co. designed to reduce or to prevent the fall of mortar droppings in cavity brickwork. It is of the fletton type and is provided with a raised ridge along the top bed; this ridge prevents mortar being squeezed out into the cavity. In order to ensure an even bed two projections of the same height as the ridge are provided towards the opposite edge. There is a slot in the ridge to allow a wall tie to bed level. In order to allow the tie to bed on the inner wall, since the perpends of the two brick skins will not line up, the makers suggest that the inner brick opposite the tie be turned upside down as shown in the sketch. This seems hardly necessary as the bricklayer can easily cut a notch in the raised rib with one or two blows of the trowel. Indeed, it might be preferable to omit the notch in manufacture altogether and leave it to the bricklayer.

Great improvements have recently been made in the texture and colour of fletton bricks. London Brick Company and Forders showed on their stand a fletton brick which was practically indistinguishable from a traditional multi-red sand facing. They are not as yet in production, but the actual brick shown had been taken from an experimental wall erected in the open some five years ago.

Various attempts have been made to introduce a brick unit of larger size than the traditional 9 in. by $4\frac{1}{2}$ in. by $2\frac{5}{8}$ in. or 3 in., but it has proved difficult to secure any advantage in speed of laying once the weight or the width of the block is so increased that it is necessary to use both hands in laying. In Germany brick blocks having a one-hand grip and hollow to reduce weight are used extensively. A block of this type, called the Multivent (The Atlas Stone Co.) was shown. It consisted of two outer faces joined by webs, so designed that when the blocks are laid with the usual broken joint there is a continuously connected air cavity throughout the wall. Moreover, the webs are recessed so

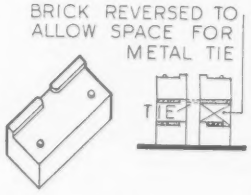


Fig. 1

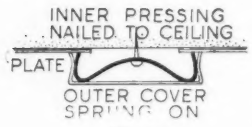


Fig. 2

that nowhere is there a continuous mortar joint through the wall. The centre web forms a good hand grip. Unfortunately, as in the case of any hollow or interlocking block, special shapes are required for openings and returns, and some thought must be given to detailing and setting out. Nevertheless, there should be a market for blocks of this type in this country.

A strikingly novel exhibit was a flat projecting canopy in brickwork on the stand of London Brick Company and Forders. Hitherto in this country reinforced brickwork has progressed hardly at all beyond the old hoop iron bond. In America and Holland flat canopies, balconies and long lintels in reinforced brickwork are common practice. The principle is that of all reinforced constructions. Steel rods in the joints take the tensile and shear stresses, and the brick performs its normal function of dealing with compressive stresses. Building inspectors in this country are at present liable to look askance at reinforced brickwork; but that is no reason for failing to develop what may be a useful system of construction. The study of reinforced brickwork shortly to be made by the Building Research Station will do much to further its use.

CEMENTS AND RENDERINGS

In most cases the provision of integral colour in renderings and artificial stonework has been made by the addition of powdered colouring matter to the cement. In order to obtain a fairly strong colour it was necessary to bring a good deal of the cement carrying the colour to the surface of the work. This increases the risk both of crazing and of patchy colour. Buffs and light reds could be obtained by using sands containing iron staining. The Adamite Company now have a process whereby silica can be permanently coloured or stained with practically no limit in the colour range, except that the colours are rather pale. A carefully graded sand is used and it is possible to work up a sandy textured surface on renderings and to reduce the cement content without losing the colour.

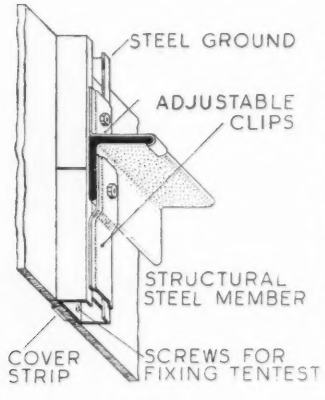


Fig. 3

SHEET MATERIALS AND LININGS

Since the war there has been a great increase in the use of factory-made sheet materials of wallboard type and latterly the hard pressed boards have been an interesting development. The fixing of most of these materials has always been difficult, since the nail heads inevitably show, and the fixing of specially prepared wooden cover moulds requires some skill if a neat job is to be made. In America stock metal mouldings have been developed. These are generally in two parts; the base or channel section is screwed or nailed to the backing and the cover is then snapped or sprung into place. A fixing of this type (Fig. 2) was shown this year by Steel Ceilings, Ltd., in conjunction with plain, flat enamelled steel ceiling sheets.

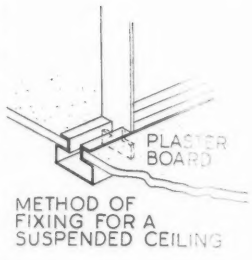


Fig. 4

The Tentest Fibre Board Co. showed a series of standard channel fixing devices for the attachment of wallboard to steel roof trusses and framed steel structures, usually an awkward business. (Fig. 3). This consists of a set of ingeniously designed adjustable clips which grip special steel grounds. A hole is punched through both the Tentest sheet and the ground by a special tool and a screw will grip and take up in the steel. They have also designed a system in which an insulating board is fixed in direct contact with corrugated sheeting. Both sheeting and board are therefore on the outer side of the steel framing or roof purlin, instead of lying, as is usual, on either side of the structural member, a method which adds to fixing difficulties and prevents ready access to the steel for repainting. Moreover, in this new method the board is supported continuously at 2-in. centres instead of only on studs or ledgers.

In the case of plasterwork, plaster baseboard, now largely used instead of lathing on ceilings, fixing has in the past been normally done by the use of lath nails. Messrs. Honeywill and Stein showed a lipped steel channel fixing which grips the edges of the boards (Fig. 4). The edges of the channel are punched so that wires may be threaded across the ceiling as reinforcement for the final coat. The channels may be nailed to wooden joists or hang on strip metal hangers when a suspended ceiling is required. Alternatively the plasterboard can be left plain and the channel given a cover mould. The same firm also showed a whole range of stock sections which can be used for building up removable office partitions, using their Gyproc plasterboard or glass panel filling.

In X-ray departments sheet lead is generally used for the protection of adjoining rooms against the effect of the rays. The fixing of the lead usually presents a number of difficulties. Venesta, Ltd., showed a composite ply board (Fig. 5) with the lead forming the core; this obviates all risk of the lead creeping or sagging. The joints are covered with a lead strip housed in a plain hollow-backed cover strip. Any veneer can be used for the face.

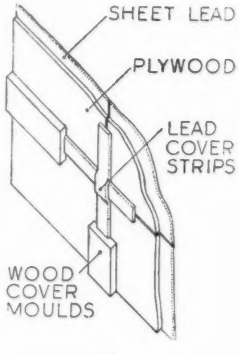


Fig. 5

FLAT ROOFS

The increase in the use of flat roofs has directed attention to the provision of light deckings, specially those with surfaces that will bear traffic and remain light coloured, and so reflect solar heat. The Universal Asbestos Company are now marketing a channelled asbestos cement sheet to form the structure of such a roof

Fig. 6

(Fig. 6). This channelled sheet is a permanent formwork, the troughs being filled with fine concrete in which steel rods are housed. The deck slabs are delivered partially concreted, so that filling on site is reduced. The upper surface is then covered with asphalt or bituminous sheeting as waterproofer, and a wearing surface of light colour can be given by the addition of asbestos-cement tiles.

The value of a light-coloured surface on asphalt or bituminous sheet roofs has often been stressed by the Building Research Station, who have made experiments to discover suitable methods of achieving this. The reflection of solar heat is not only of importance to the rooms below but in reducing thermal movements in the roof slab and also helping to eliminate blistering or similar possible failure of the bituminous membrane itself. G. M. Callender & Co. have introduced a system of roof surfacing which they have tried out for some years in France. It consists of concrete slabs supported on resilient bituminised pads at their corners (Fig. 7). This system appears to have several possible advantages, among which are easy removal of individual slabs and the elimination of the risk of the bituminous membrane cracking along the lines of the joints.

CONCRETE

Vibrated concrete is, in this country, hardly two years old. It has numerous advantages not only in precast but also in *in situ* work. Before long it is likely to be in general use in all concrete work. Its use not only makes for better filling of moulds but induces an early set in the concrete. At present research workers, among them the Building Research Station, are still engaged on working out optimum frequencies; nevertheless several machines are now marketed, some with the desirable high frequencies.

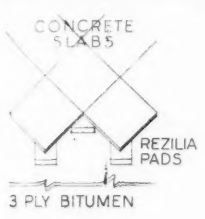


Fig. 7

Vibration of precast units is carried out on vibration tables, that of *in situ* work by clamping electrically driven vibrators to shuttering. E. P. Allam & Co. market a simple motor unit (the Trillor) which is used in both methods. It does not transmit vibrations through cams as has been general practice so far, but by the use of slightly eccentric ball bearings which are made specially strong to resist the additional wear. It gives nearly 6,000 vibrations a minute.

REINFORCEMENT

A good deal has been heard of the use of high-tensile steel in continental work and various types have been available in this country for many years. This year the Isteg bar (Fig. 8) is shown for the first time. Two ordinary mild steel bars are stretched by being twisted together cold to a predetermined point beyond the yield point of the component bars. The raising of the yield point in the steel is as much as 50 per cent., and also the cold working automatically tests every bar. Considerable reduction in the weight of steel for a given strength in the resultant reinforced concrete unit is therefore possible. Moreover, the twisted bars give a bond with the concrete that makes the formation of hooks unnecessary.


ISTEG STEEL FOR CONCRETE REINFORCEMENT
Fig. 8

TUBE FITTINGS

Methods of jointing copper pipe were illustrated and discussed some time ago in this section of the JOURNAL* and details given of the extraordinary simplicity of erection possible with the newer methods. It was possible to compare for the first time at the Exhibition the various systems of capillary joint and interesting to learn that each was commanding a good market. There is in fact little to choose between them, advantages and disadvantages of each weighing about equally. Copper and special alloy tubing with capillary joints are now marketed by Imperial Chemical Industries for electrical work. This should make a first-class electrical job.

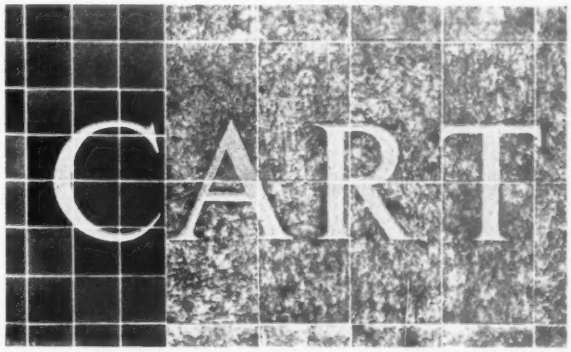


Fig. 9

Tubular railing fittings have in the past usually been assembled with screwed joints, which in the case of the normal closed end shapes either required the use of right and left hand threads or pinned joints at intersections of rails. A new fitting, in which the grip is obtained by the use of a sunk hexagonal headed grub screw, was shown for the first time by Geo. H. Gascoigne Company. This should prove useful for a variety of tubular constructions.

HEATING

It is well known that the ordinary wall type of hot water radiator is in fact almost entirely a convector, though the implications of this fact are not usually realised. Recently the development of pure convector heaters using gas or electricity has drawn attention to the possibility of producing a hot water heated unit on similar lines. This is likely to give greater efficiency and a neater looking fitting than the ordinary radiator. A new convector, of which full details are not yet available, marketed by Crane, Ltd., was originally produced in America. It consists of a high efficiency heating unit, enclosed in a plain sheet metal casing. This can be either set flush with a wall or project as does a radiator.

Both Aga Heat and Smith & Wellstood have increased the range of fully insulated cookers now available, in particular in the larger sizes suitable for use in industrial and com-

*12 October 1935, pp. 1149-50.

Fig. 10

mercial installations. The former firm also showed an insulated high efficiency domestic boiler which should be of use where there is no separate heating chamber and it is desired to avoid overheating the kitchen. Under the heading of "Heating" a new heating insulation material called "Zonalite" may be considered. This material, shown by Aga Heat, is a granular substance of extreme lightness made by expanding waste mica by heat. A high insulation value is claimed for it and, being a purely mineral substance, it is practically indestructible. It should be of value where insulating material is required that can be poured into a cavity.

MISCELLANEOUS

An interesting development in the technique of wall tiling was indicated on the stand of Carter & Co. The name of the firm was reproduced in raised letters integral with but of a different colour from the background (Fig. 9). The lettering was, moreover, extended across two sizes and colour of background tiles, more or less regardless of the joints. This indicates possibilities in the way of displaying permanent lettering or notices where these are required on tiled walls as in lavatories, swimming baths, certain shop interiors, etc., and possibly on shop fronts. The technique is not new but the idea of application is.

Change in design of sanitary fittings is usually limited to superficial alterations in shapes and the omission, or less fortunately the addition, of ornament. Messrs. Adamsez, however, showed a W.C. pan which is a fundamental change in structure (Fig. 10). The usual rim which carries the flushing water has been eliminated and the discharge takes place mainly through a single orifice at the back of the pan, a secondary inlet being provided at low level to ensure final refilling of the trap. As a result the bowl is completely smooth. More than that, adequate flushing can be obtained from a two gallon low level cistern.

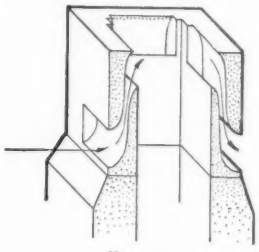


Fig. 11

For some reason, probably because hitherto it had not occurred to anyone to do otherwise, anti-down-draught chimney pots have always been made as units for single flues, although almost always they are used on multiple stacks. Inevitably single pots give a somewhat ragged, and at worst a hideous appearance. A single unit which can, if necessary, be built up to form a continuous cap for stacks of any size is now available, made in cast concrete. It is called "Konkerwind" (Fig. 11). The section is claimed to produce an induced upward draught in the flue, but it is probable that architects will be mainly interested in the neatness of the design.

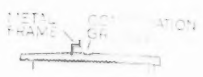


Fig. 12

Window cills are notoriously prone to admit moisture. Wood cills are the worst, but even purpose-made tile cills are liable to crack at the joints. A notable advance has been made by the marketing of a one-piece external cill and internal window board of slate (Fig. 12). This has been produced by Slate Slab Products. The cills are made in lengths to suit standard steel windows and are complete with a groove to take the metal section, an external throating and a sinking to collect condensation. The underside is roughened so as to key well with mortar. The inner surface may be painted or polished as desired. These cills have also the outstanding merit of being cheap.

The problem of opening and closing a window to which a fly screen has been fitted, without disturbing the screen or having a permanent hole in it, has been well (and cheaply) solved by Henry Hope & Sons. This is explained in the sketch (Fig. 13).

Glass bricks have recently received a good deal of public notice at this Exhibition, though the use of pavement light lenses in vertical work is common. But the term "glass brick" is becoming restricted to the hollow glass unit built up in situ with a thin mortar joint instead of a reinforced concrete rib. Those shown by Pilkington Brothers were based on the Owens Illinois brick of America and consist of two square glass trays cemented together when hot with a special metallic compound. There is a partial internal vacuum which increases the thermal insulation value, while either the internal or external surfaces can be fluted to give good diffusion of light.

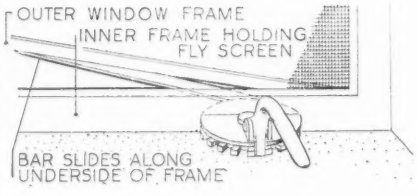


Fig. 13

The Queen's megaron, in the Palace of Minos at Knossos, reconstructed by Sir Arthur Evans

ARCHÆOLOGY IN GREECE

Fifty Years' Work of the British School at Athens

AN EXHIBITION AT BURLINGTON HOUSE

14 OCTOBER TO 14 NOVEMBER

Archæology in Greece has always been of particular concern to architects. From the start of systematic Hellenic research a century and a half ago, architects have been prominent in the actual work in the field and, as a profession, have been among the first to benefit, and that most richly, from the stimulus of Hellenic culture.

Until Stuart and Revett set out for Athens, "the Mother of Elegance and Politeness" as they called her, in the stilted language of an age that dare not acknowledge enthusiasms, the luminous cloud of Rome had obscured the view Eastward for eighteen hundred years. They opened the eyes of Western Europe to a new-found Wisdom that

> motion'd the marble to her living grace, and took
> her dwelling in the high-templed Acropolis
> of the fair city that still hath her name.
>
> . . . . . .
>
> ripening an everlasting fruit that in dying
> scatter'd its pregnant seeds unto all the
> winds of heav'n.

The work of modern archæologists carries on the tradition and the enthusiasms of these earlier scholars, Stuart, Revett, Dawkins, Wood, Cockerell, and many others, who with their fellows from other countries established the popular interest in Hellenic research without which archæologists are paralysed. The

Exhibition shows how much has been done in recent years and is a challenge to our interest which we would be foolish to disregard.

The collection of exhibits in four rooms at Burlington House illustrates fifty years' work in Greece and Crete. It is the public celebration of a jubilee in which the R.I.B.A. can share as an organisation which since the foundation of the school has been closely associated with its work.

The first of the four rooms is chiefly devoted to the work of the Byzantine Research and Publications Fund in association with the British school. This work, mostly concerned with the study of Byzantine churches, has been the special province of architects ; and, to a great extent, the work has been done by members of the R.I.B.A., many of whom worked in Greece with Institute studentships. Outstanding in this work, as those who were first in the field, are R. S. Weir and Sidney Barnsley. With them and succeeding them at various times have been numberless others, including the immediate past and the present Honorary Secretaries of the R.I.B.A., W. R. Lethaby, Ramsay Traquair, Theodore Fyfe, William Harvey, whose survey of the churches of the Nativity and the Holy Sepulchre for the Palestine government has recently been published, Walter George, and, most recently, Hubert Megaw, who went direct to Greece from the Cambridge School of Architecture. The exhibits include many fine drawings of churches and mosaics ; most notable William Harvey's incomparable drawings of the Church of the Nativity and the Dome of the Rock. In cases are ikons and Byzantine pottery lent by Professor D. Talbot Rice, and hung above the pictures on the walls are embroideries from the Greek islands. The Byzantine Fund has produced a great mass of work of first importance, much of which has been possible through the generosity of liberal supporters, particularly the late Dr. Edwin Freshfield. More money is wanted now to publish the work done by Hubert Megaw on the churches of Thessalonika.

The second room contains drawings, photographs and objects, representing a fraction of the results obtained in the major excavations in Greece. Though the school's work has been concerned with all periods—in one room is Sir Arthur Evans carrying us back to 3500 B.C., in another photographs of a present-day rustic mumming play—the best known of the researches conducted directly by the school have been those devoted to the great Prehistoric period and to the Archaic period from the 9th to the 6th centuries. The prehistoric work is represented here by Phylakopi, a settlement in Melos dating between 2500-1200 B.C. Kamáres and Palaikastro, where the plan of the Minoan town has been revealed. It is shown here in plans and photographs, and the wealth of finds represented by pottery, ivories and terra-cotta, bronze and stone

Axonometric drawing of the churches in the Monastery of St. Luke of Stiris in Phocis made by R. S. Weir and S. H. Barnsley in 1890

objects, many of which are of great and simple beauty. Mycenae, best known of all, is fully represented. Schliemann started scientific excavation here in 1876; he and his successors revealed the monuments which are known to every architectural school boy, the Lion Gate, the Beehive and Chamber Tombs. Between 1920 and 1923 the school excavations "set the problems of Mycenae in an entirely new light," adding at least 2,000 years to its known history. The Mycenae section fills the facing wall on entry, excellently arranged in the centre are drawings of palace frescoes where, particularly, should be seen a spirited frieze of warriors and horses in whose simple colourful pattern is the essential delight of Greek art of all periods. The remaining exhibits are from Sparta. It would be nice to have space here to describe exhibit after exhibit, but so would it have been nice if the exhibition could have filled ten rooms instead of four.

Among the most important exhibits in the second of the Greek rooms are drawings and objects from Perachora, which, since 1930, has been the school's chief site. Perachora was an early Hellenic settlement, between 900-400 B.C., on one of the loveliest sites in Greece (a photograph of it is our frontispiece). Here, at the foot of the rocks, is a harbour besides which were built two temples, one in the 9th century which was twice rebuilt and another in the 8th century; behind them grew a fortified town from which many objects have been recovered, the most complete series of Proto-corinthian and Corinthian art yet found, pottery and bronzes. One of the objects of most architectural interest is the model, reconstructing a thatched timber building, which we hope to illustrate later. This has been studied by Mr. Hope Bagenal and has provided the basis for an important development of his studies of the primitive building forms common to simple agricultural communities in all countries.

The last room in some respects is the most exciting of all. Sir Arthur Evans' magnificent excavations in Crete are well known through his books, but here for the first time Londoners can see compressed into one exhibition the whole of his great achievement; an endeavour that has now been brought to its conclusion after forty-three years' work. Professor J. L. Myres, chairman of the Exhibition Committee, then a young student of the school, was the first English archæologist to set foot in Crete. In 1900 Sir Arthur Evans began his work there, which has revealed one after another incomparable treasures, notable for all the qualities that make archæological discovery worth while to the professional archæologist and that demand the wondrous attention even of those who normally pay no attention to such things. Sir Arthur has unravelled a thread whose course was even more intricate than that which led Theseus to the fabled Minatour. In its course he has revealed in amazing detail the successive Minoan cultures; reconstructions of the palace, frescos (one relief fresco is reproduced full scale), figurines, pottery, among which is some of the loveliest in the exhibition, and, best of all perhaps, a case full of gems of fineness and grace and vigour defying comment from one who, knowing nothing of their archæological value, is content to wonder at their beauty.

Much more could be said of this admirable show. All that can and must be said in conclusion is a word of thanks and congratulation to all those who have conducted these excavations and to those who have arranged the exhibition so well.

The Exhibition of Everyday Things at Manchester

The Exhibition of Everyday Things was opened by Mr. H. S. Goodhart-Rendel at the City Art Gallery, Manchester, on 1 October. Dr. F. E. Tylecote, Chairman of the Manchester Art Galleries Committee, presided. Mr. Lawrence Haward, Curator of the Art Gallery, is to be congratulated on the layout and arrangement of the Exhibition; his keenness and enthusiasm in support of the exhibitions organised by the Institute are greatly appreciated.

Mr. F. L. Halliday, Hon. Secretary of the Manchester Society of Architects, has taken a tremendous interest in this Exhibition, and the Society as a whole have done everything in their power to encourage the public to visit the Exhibition. They have also undertaken to arrange a series of lectures in connection with it, and have organised visits of school-children to the Exhibition as well as a special talk for teachers.

In his speech Mr. Goodhart-Rendel explained that the Exhibition aimed at being a sort of shopping guide to those who wished to buy simple, cheap things of agreeable design which were readily obtainable through the usual channels. A horrible distinction was at present drawn between the serious and the popular. "I believe," he said, "that none of the stupid, gaudy, misshapen, clumsy things which are sold in the shops is bought for its qualities, but for something else which might exist just as well in objects which have not got these faults. It is the duty of the industrial adviser to find out what this quality is, and to incorporate it in his products. It is hard to ask someone who likes fruity blobs of ornament to be satisfied with a few parallel lines, with a circle thrown in as a treat."

Mr. Goodhart-Rendel went on to say that although there had, in recent years, been a great advance in industrial design we were still a long way from the goal, and it was hoped that the present Exhibition would spread useful and trustworthy information about the progress made, and that artists and manufacturers would learn to collaborate better. At present the public put up with a great deal it did not like, but it was the Institute's duty to help to make the public more impatient.

Dr. F. E. Tylecote, Alderman G. Westcott, President of the Manchester Society of Architects, and Sir Percy Worthington also spoke. Co-operation from retailers, clubs and institutes in Manchester has been most gratifying, and it is also hoped that it may be possible for the Manchester Society of Architects to arrange a broadcast on the Exhibition, which has in other centres proved a very effective means of drawing the public. The Exhibition will close on 15 November.

Reviews

THE THIRTEENTH WREN SOCIETY VOLUME

The thirteenth volume of the Wren Society's publications is the fourth to be concerned mainly or entirely with St. Paul's, and the first of four volumes now to be issued carrying the previously published research (Vols. I, II and III) a stage further. In his introduction Mr. Bolton defends the allocation to a single building of seven out of the twenty volumes proposed by the Society. St. Paul's, he writes, is the essential masterwork of Sir Christopher Wren, the standard by which his greatness must finally be judged. Few students would dispute the justice of this opinion. Indeed, apart from reasons dictated by regard for the requirements of personal studies, it would be difficult for the Society, with its high standard of documentation, to deal with a building of St. Paul's importance in fewer volumes. Not only is the architectural history frequently involved and obscure (*see* the discussion in the present volume on the First Model and the design for the Baldachino), but the mass of material, great enough at the start, has constantly been increased as a direct result of the Society's work. In this volume, for instance, there are three virtually new discoveries, the First Model, the Baldachino drawing and the two drawings discovered by the R.I.B.A. librarian in an album from the Sir Thomas Phillips collection, and purchased by the R.I.B.A., the Friends of the National Libraries and the Dean and Chapter for the Cathedral library.

The volume opens with a useful chronology of events relating for the most part to St. Paul's. This is followed by transcripts of documents and correspondence. Here for the first time is presented together the bulk of the State documents, contemporary notes and correspondence of importance relating to the proposals for the repair of the old cathedral, the negotiations for the rebuilding after the fire and the execution of the work. Some of the material has been published before, but even such well-known and much-discussed documents as the famous Roger Pratt "Objections" to Wren's First Model of 1672, or the Commission of 1673, or the Royal Warrant, derive a new value from their conjunction with the other material in the book. The Pratt Objections have always been obscure, but now with the rediscovered remains of the First Model before us the obscurities have largely vanished, and Pratt's opinions have become, in Mr. Bolton's words, "not very intelligent appreciation" of the design which is now for the first time given real form and substance.

Mr. Bolton's analysis of these First Model remains is probably the most interesting thing in the volume. Early this year Mr. Bolton was invited by Mr. Godfrey Allen, Surveyor of the Fabrick, to inspect "a much dilapidated and obviously incomplete wooden box." "By degrees, through a careful collation of such few references as exist," a very good case was established for the acceptance of this as the First Model of 1672. The design was prepared at a time when Wren did not think that a cathedral on the scale of the present St. Paul's was possible, and consequently was composed of the simplest possible elements of a civic basilica, a spacious choir terminated at its west end by a great domed vestibule. The vestibule and dome parts are unfortunately missing, but the part that remains has particular value as a link relating this design for St. Paul's with other early Wren buildings and contemporary work in France.

The documents and papers, which with correspondence with Dean Sancroft and others fill about fifty pages of the volume, give a fascinating cross-section of the strata of interests involved in this great scheme. Interspersed among the transcriptions are several valuable editorial notes. The memoranda include such various things as the Commissions and reports relating to the repair of the old cathedral, the order for its demolition, the warrant for the design chosen May 14 1675, notes from building accounts and the Harleian MSS. on Wren's staff at St. Paul's; and various notes on the materials such as those on the use of Portland stone for the structure and copper for the dome.

The section containing correspondence opens with a magnificent letter from Thomas Sprat, later Bishop of Rochester, to Wren:

> My Dear Sir,
>
> I must confess I have some little Peek against you—therefore am not much displeased, that I have this Occasion of telling you some ill News. The Vice-chancellor did yesterday send for me, to inquire where the *Astronomy Professor* was, and the Reason of his Absence, so long after the Beginning of the *Term*—I used all the Arguments I could for your Defence. I told him that *Charles the Second* was King of *England, Scotland, France* and *Ireland*; that he was by the late *Act of Parliament* declar'd absolute Monarch in these his Dominions; and that it was this mighty Prince who had confin'd you to *London*. I endeavour'd to persuade him that the drawing of Lines in Sir *Harry Savill's* School was not altogether of so great a Concernment for the Benefit of *Christendom*, as the rebuilding of St. *Paul's*. . . .

In fact, "If anyone calls, say I'm building St. Paul's"; —did Mr. E. C. Bentley know of this?

Perhaps the only embarrassment caused by this fine volume is that it provides, almost on every page of its text, excellent cause for entertaining digression into the political and social and economic life of the time, which may not have much to do directly with the building of the Cathedral, but which nevertheless

The Wren Society. Volume XIII. 1936. Designs and Drawings by Sir Christopher Wren for St. Paul's, the Residentiaries' Houses and the Deanery. 4to. xx + 206 pp. + 36 plates. Oxford. 1936.

is reason enough why all and sundry should dip into these fruitful pages.

Among the important letters is one by Wren, reprinted from Parentalia, on his visit to Paris in 1665, to which the Editors have added a table expanding Wren's information about the buildings visited. It has been suggested that Wren was a clumsy letter writer, but if it is true that his literary was not the equal of his architectural ability, we can surely sacrifice polish in this domestic art if we gain the humour and humanity that pervades all his letters and even his most formal documents. Of the collapse of Old St. Paul's, he writes to Sancroft: "I must comfort you as I would a freind for the losse of his great Grandfather, by saying in course of Nature you could not enjoy him, soe many and soe evident to me were the synes of its ruine, when last I viewed the building."

The transcript of the accounts fill 134 pages. The first monthly book for October is given in full; subsequent entries are abstracted, but so as to deprive the transcript of nothing of value. The gratitude which the Editors express to the Dean and Chapter for allowing the second copy of the accounts to be transferred to the Soane Museum for transcription and study will be echoed by all who now for the first time are enabled to study them at ease. In the limits of a review it is not possible to do more than refer to contents which will certainly be, as is the intention of the Society, a source book for all subsequent scholars.

The volume concludes with 36 plates, magnificently reproduced, mostly from the Cathedral library, which supplement those in Vols. I, II and III. The last three plates are reproductions of Mr. Cecil Brown's incomparable measured drawings which he made in 1931 during the reparation work. His great section is one of the finest architectural drawings ever produced in England.

In the introductory note by the Editors the plan for the remaining seven volumes is discussed. The only additional volume which we should like to see included is one devoted exclusively to Wren's work as a scientist. It is often thought that Wren, after he became an architect, abandoned his scientific work. To a certain extent this is true, but a scientific (a seventeenth century humanistic-scientific) attitude pervaded all his work. He did not resign his Savillian Professorship of Astronomy until 1673, four years after his appointment as Surveyor-General, and his second year as President of the Royal Society was not until 1681.

The Wren Society was founded "with the object of elucidating the career and achievements of Sir Christopher Wren"—a term of reference which surely must be taken to include his scientific work. It is realised fully that this extension, since it must be considered as such in practice if not in the terms of the Society's mandate, cannot lightly be undertaken, but there is no possible doubt that the picture of Wren that is being prepared for posterity will be seriously deficient as a delineation both of the man and of his works if reference to his scientific interests is omitted.

HEATING AND VENTILATING FOR STUDENTS

THE STUDENTS' TEXT BOOK OF HEATING AND VENTILATION, *by Norman Wignall, A.M.I.Mech.E., M.I.H.V.E. 4to. 118 pp. + 118 figs. London: The Heating and Ventilating Engineer, 1936. 10s.*

Though written for students of heating and ventilating in technical schools, this book should be useful to students of architecture and possibly also to older practitioners who want to understand what their heating engineer is up to. Some parts of the book deal with matters outside the province of the architect, but all the necessary sections of the subject are covered without entry into abstruse considerations. For example, the necessary scientific preliminary discussion of the nature of heat is concisely but clearly dealt with in a chapter of five pages. The author avoids jargon, explaining necessary technical terms as he comes to them. Indeed, a notable feature of the book is the easy way in which it progresses from step to step. There are no awkwardly high mental fences for the student to take unaided—a common failing of text books. At the end of the book are sets of test questions grouped under chapter headings; this is a useful aid to the student in determining to his own satisfaction whether he has fully grasped the contents of a chapter. Although the chapters are not sub-headed for easy reference there is a full index. The subject matter is thoroughly up to date.

CONCRETE SURFACE FINISHES

CONCRETE SURFACE FINISHES, RENDERINGS AND TERRAZZO, *by Concrete Publications, Ltd. 8vo. 134 pp. + 84 figs. London: Concrete Publications, Ltd., 1935. 6s. 6d.*

For these days of concrete, this is a useful book. It describes and illustrates all the known ways of surfacing concrete either in-situ or pre-cast. The well-known ones, such as bush hammering, rubbing down, wire brushing, use of retarders naturally are dealt with at length. But similar consideration is accorded to others not so common, such as acid treatment, the use of sliding plates, the manifold varieties of special shuttering and "split blocks." This last is so unusual as to require explanation. Blocks are cast with an external groove that gives an easy plane of cleavage and the cleft faces are built as face work.

Renderings are dealt with at length not only from a design point of view (many are unpleasantly "arty") but also structurally; expansion joints in renderings are discussed and illustrated.

Machine polishing with carborundum discs is a fairly new method of finishing in-situ work that is growing in use. It has the additional merit of removing laitance from the surface. A good example of its use is illustrated, that of concrete piers at the Merchant Taylors' School, where the marks of the shuttering lifts are picked out with gold lines, contrasting pleasantly with the natural greenish-grey colour of the concrete. Indeed, the new student of concrete finishes could well begin by visiting this school, and also Mr. Maxwell Ayrton's bridge at Twickenham.

The book contains chapters on interior finishes, terrazzo and mosaic, and on paints, coloured cements, stains, etc. Detail defects that so often blemish concrete structures are discussed. A sensible recommendation is that the face edges of expansion joints should be finished with a groove to take up the squeezing out of the filling material. This book is a notable addition to the technique of concrete construction.

CORRECTION

In the review of Sir Raymond Unwin's Paper on *The Housing Problem: How Planned Distribution May Prevent Overcrowding*, published in the JOURNAL of 5 September, it was stated that half a million dwellings at 12 to the acre would only increase the radius of London by .09 of a mile. This should have been .95 of a mile.

Review of Periodicals

Attempt is made in this review to refer to the more important articles in all the journals received by the Library. None of the journals mentioned are in the Loan Library, but the Librarian will be pleased to give information about prices and where each journal can be obtained. Members can have photostat copies of particular articles made at their own cost on application to the Librarian.

SCHOOLS

ARCHITECT AND BUILDING NEWS. *1936. 2 October. P. 19.*

FORUM (BRUNN). *1936. No. 8. P. 149.*

French schools at Prague, by J. Gillar.

BAUMEISTER (MUNICH). *Vol. XXXIV. 1936. September. P. 317.*

Primary school, Zurich-Manegg, by R. Rohn, a fresh well-lit building. Gymnasium.

BUILDER. *Vol. CLI. 1936. 14 August. P. 296.*

Boarding house, Stowe School, Bucks, by R. Fielding Dodd [*F.*], includes dormitories and studies.

LIBRARIES AND MUSEUMS

ARCHITECT AND BUILDING NEWS. *1936. 18 September. P. 343.*

Wallington, Surrey, Public Library, by Messrs. R. Atkinson [*F.*].

BUILDING. *1936. September. P. 366.*

Osterley, Middlesex, Branch Library, by G. R. Gillingham.

ARCHITEKTURA I BUDOWNICTWO (WARSAW). *1936. No. 4. P. 116.*

Competition designs for a museum at Linköping, Sweden.

RADIO

BOUWBEDRIJF (THE HAGUE). *1936. 18 September. P. 189.*

"Avro-omroepgebouw," Hilversum. Radio studios.

EXHIBITIONS

BUILDER. *1936. 11 September. P. 470.*

ARCHITECT AND BUILDING NEWS. *1936. 18 September. P. 335.*

British Pavilion for Paris 1937 Exhibition, by Oliver Hill [*F.*].

BAUGILDE (BERLIN). *1936. No. 27. P. 777.*

BAUFORMEN. *1936. September. P. 569.*

Exhibition of Art and Handicraft in Building, Leipzig: description of building and exhibits.

CIVIC BUILDINGS

ARCHITECT AND BUILDING NEWS. *1936. 25 September. P. 391.*

BUILDER. *1936. 18 September. Supplement. 25 September.*

ARCHITECTS' JOURNAL. *1936. 1 October. P. 449.*

Dartford Municipal Buildings and Town Hall Competition design. Winner: D. G. Walton [*A.*].

ARCHITECTURE ILLUSTRATED. *1936. September. P. 75.*

Municipal Office, Dudley, by Harvey & Wicks [*F.A.*].

ARCHITECT AND BUILDING NEWS. *1936. 4 September. P. 281.*

Central Postal Order Department, Paris, by M. Roux-Spitz.

CONSTRUCTION MODERNE (PARIS). *1936. 27 September. P. 966.*

Post Office, Asnières, France, by J. Bukiet.

ARCHITETTURA. *1936. August. P. 353.*

Post and Telegraphs Building, Naples, by Vaccaro and Franzi. One of the finest and most ambitious of the new public buildings in Italy.

BYGGE KUNST (OSLO). *1936. No. 8. P. 176.*

Competition designs for Trondheim Court House. Winners: Bakstad & Bratlie.

BAUMEISTER (MUNICH). *1936. October. P. 342.*

Two savings banks in Saarland.

ARCHITECTS' JOURNAL. *1936. 10 September. P. 345.*

Open-air bandstand at Swindon.

SWIMMING BATHS

BAUMEISTER (MUNICH). *1936. October. P. 325.*

Covered swimming bath, Kiel, by R. Schröder, and open-air bath with dressing pavilion at Cologne Stadium. Both good references.

DESIGN & CONSTRUCTION. *1936. September. P. 365.*

Bathing pool, Portobello, Edinburgh.

SHOPS AND MARKETS

ARCHITECTS' JOURNAL. *1936. 24 September. P. 419.*

Bradford Co-operative Store, by W. A. Johnson (J. W. Cooper, arch. assistant).

ARCHITECT AND BUILDING NEWS. *1936. 11 September. P. 312.*

Covered market, Helsingfors, by Hytonen and Luukkonen.

TRANSPORT BUILDINGS

ARCHITECTURE D'AUJOURD'HUI. *1936. August.*

Railway stations. Important reference number. The most valuable survey of examples yet published. A copy is being added to the Loan Library.

KENTIKU SEKAI (TOKYO). *1936. July. Plates p. 10.*

Yaizu and Wada Railway Stations, Japan.

CONSTRUCTION MODERNE (PARIS). *1936. 27 September. P. 962.*

Railway station, Bois-Colombes, by Urbain Cassan. Small main-line station.

BYGGMÄSTAREN (STOCKHOLM). *1936. No. 24. P. 291.*

Bromna Aerodrome, by Paul Hedquist. A useful reference: one of the most beautiful aerodromes in Europe.

ARCHITECTURE (PARIS). *1936. 15 September. P. 313.*

Aerodrome, Bordeaux-Mérignac, by A. Duprat.

ARCHITECT AND BUILDING NEWS. *1936. 25 September. P. 385.*

Perth Airport, by Graham Dawbarn [*F.*], includes terminal building, hangar for 20 machines, with annexe lecture rooms for training school, staff houses, pupils' cottages, etc.

ARCHITECTURE (U.S.S.R.). *1936. No. 9. P. 59.*

Aerodromes. Article illustrating many European and U.S.A. examples.

INNEN DEKORATION (STUTTGART). *1936. August. P. 267.*

Zeppelin "Hindenburg." Planning and decoration of passengers' quarters by Fritz A. Breuhaus.

ARCHITECTURE (U.S.S.R.). *1936. August. P. 30.*

Designs for new quays and bridges in Moscow.

ARCHITECTS' JOURNAL. *1936. 24 September. P. 407.*

Underground car depot for London Passenger Transport Board, Northfield, by Stanley Heaps [*F.*], with Adams, Holden & Pearson [*FF.*]. Depot for washing, repairing of underground railway rolling stock.

FACTORIES

ARCHITECT AND BUILDING NEWS. *1936. 2 October. P. 17.*
Gillette Factory, Great West Road, Sir Banister Fletcher [*F.*].
ARCHITECTS' JOURNAL. *1936. 1 October. P. 462.*
Furniture Factory, Edmonton, by Nicholas & Dixon-Spain [*FF.*].
BUILDER. *1936. 4 September. P. 433.*
Cycle factory, Ashford, Kent, by C. Sykes [*A.*].

WELFARE BUILDINGS

BUILDER. *1936. 4 September. P. 422.*
Maternity and Child Welfare centre and day nursery, Westminster, by F. Milton Harvey [*A.*].
BUILDING. *1936. September. P. 372.*
Orphanage in Italy, by Griffini and Faludi.

HOSPITALS

JOURNAL OF ROYAL SANITARY INSTITUTE. *1936. September. P. 140.*
Isolation Hospitals. Important papers by Sir Weldon Dalrymple-Champneys, of Ministry of Health, and W. H. Hobday [*F.*], on the future requirements of Isolation Hospitals. Mr. Hobday's paper fully illustrated.
ARCHITECTURAL REVIEW. *1936. September. P. 104.*
ARCHITECTS' JOURNAL. *1936. 3 September. P. 308.*
Infectious Diseases Hospital, Paisley, by Burnet, Tait & Lorne [*FF.*]. 181 patients in detached wards, 49 nurses, 6 sisters, matron, M.O., etc.; and maids and all service apartments.
ARCHITECTURAL REVIEW. *1936. October. P. 139.*
Sully Tuberculosis Hospital, by W. A. Pite, Son & Fairweather [*FF.*].
BUILDER. *1936. 18 September. P. 528.*
Nurses home and paying patients' block, University College Hospital, by Michael Waterhouse and Cedric Ripley [*FF.*].
ARCHITECTURE (PARIS). *1936. 15 September. P. 305.*
Neuilly-sur-Seine General Hospital, by E. Jacquemin. Eight floors, including basement, well illustrated and described. Includes short discussion on comparative merits of multi-floored hospitals.

CINEMAS AND THEATRES

ARCHITECT AND BUILDING NEWS. *1936. 4 September. P. 284.*
Odeon Cinema, Sutton Coldfield, by H. W. Weedon [*A.*]. Seats 1,700.

CHURCHES

ARCHITECT AND BUILDING NEWS. *1936. 18 September. P. 368.*
Church, Warninglid, Sussex, by F. G. Troup [*F.*]. Simple aisleless church of interesting economical construction. Cost £1,200.
ARCHITECTURE ILLUSTRATED. *1936. September. P. 67.*
Church of the Sacred Heart, Hillsborough, Sheffield, by C. M. Hadfield and R. Cawkwill [*F.A.*].
BAUWELT (BERLIN). *1936. No. 38. P. 1.*
St. Josefs-Kirche, Berlin-Siemensstadt, by Hans Hertlein.
BAUWELT (BERLIN). *1936. No. 37. 10 September. Plate 5.*
Roman Catholic Church, Japan, by Antonin Raymond.

DOMESTIC (GENERAL)

ARCHITECT AND BUILDING NEWS. *1936. 18 September. P. 346.*
House for Josef von Sternberg, San Fernando Valley, California by R. J. Neutra. One of the most interesting modern buildings recently built in the U.S.A.
ARCHITECTS' JOURNAL. *1936. 17 September. P. 367.*
Clareville Court, Kensington, by G. Grey Wornum [*F.*]. 23 flats with squash court.
Also Flat block near Antwerp, by Leon Stynen.
PROFIL (VIENNA). *1936. No. 8. P. 352.*
Doctors' consulting rooms with X-ray room.
JOURNAL OF THE INDIAN INSTITUTE OF ARCHITECTURE. *Vol. III. No. 1. 1936. July.*
Flats at Byculla, Bombay.

HOUSING

JOURNAL OF ROYAL SANITARY INSTITUTE. *1936. September. P. 169.*
Housing and Planning. General discussion of modern problems, by Sir Raymond Unwin.
ARCHITECTS' JOURNAL. *1936. 10 September. P. 339.*
Working-class flats, Manchester, by L. Heywood [*A.*], includes washhouse, aged people's flats and playgrounds.
ARCHITECTS' JOURNAL. *1936. 3 September. P. 308.*
Birmingham Flats Competition. Winning and premiated designs.
ARKITEKTEN (COPENHAGEN). *1936. No. 6-7. P. 113.*
Continuation of Kay Fisker's critical survey of Danish housing. Present article deals with 1914 to 1936.
JOURNAL OF INSTITUTE OF MUNICIPAL AND COUNTY ENGINEERS. *1936. 15 September.*
South African Housing, Town Planning and Slum Clearance.
ARCHITECTURE (U.S.S.R.). *1936. No. 9. P. 9.*
Present-day Russian housing: plans.
ARCHITECTS' JOURNAL. *1936. 24 September. P. 411.*
Housing scheme near Copenhagen, by Skjot-Pedersen.
BYGGMÄSTAREN (STOCKHOLM). *1936. No. 26. P. 306.*
Various Swedish housing schemes.
DE 8 EN OPBOUW (AMSTERDAM). *1936. 19 September. P. 229.*
Balcony approach flats.
WERK (ZURICH). *1936. September. P. 285.*
Small flat building, Doldertal, Zurich, by A. & E. Roth.
BAUWELT (BERLIN). *1936. No. 36. P. 1.*
Small three-flat building by Georg Schutz, Dusseldorf, similar to the Zurich example above, though more traditional.

HOTELS AND INNS

ARCHITECTS' JOURNAL. *1936. 10 September. P. 347.*
The Boundary Hotel, Liverpool, by E. Shennan [*F.*].
ARCHITECT AND BUILDING NEWS. *1936. 2 October. P. 11.*
The Drum Inn, Cockington, Devon, by Sir Edwin Lutyens.

FARMS

BUILDER. *1936. 11 September. P. 473.*
Piggeries and cowhouses at Shenly Mental Hospital Farm, by W. T. Curtis [*F.*], Middlesex County architect.

MATERIALS

BRICK BUILDER. *1936. September. P. 21.*
Roofing Tiles in England. II—Pantiles, by Frank Roscoe [*A.*].
ARCHITECT AND BUILDING NEWS. *1936. 11 September. P. 299.*
Thatched Roofs. Note by Edwin Gunn [*A.*], on gables and dormer treatment.

EQUIPMENT

ARCHITECTURE D'AUJOURD'HUI (PARIS). *1936. July.*
Electricity and architecture. Whole number deals with uses, installations, equipment, etc. A useful reference.

JOURNAL OF INSTITUTE OF HEATING AND VENTILATING ENGINEERS. *1936. September. P. 281.*
Air conditioning in its relation to human comfort : paper by B. Adshead.

JOURNAL OF LAND AGENTS' SOCIETY. *1936. September. P. 497.*
Chimney design. Notes on remedy of defects, including smoking, by W. G. Benoy.

TOWN PLANNING

JOURNAL OF CHARTERED SURVEYORS INSTITUTE. *1936. October. P. 213.*
Ribbon Development Act, 1935. Critical annotation, by Sir Harriss Firth.

GENERAL, AESTHETICS AND BIOGRAPHY

ARCHITECTURAL RECORD (NEW YORK). *1936. September. P. 181.*
The Architect in a Modern World. Article by R. L. Duffus, analysing opinions of many leaders of architectural thought, sociologists, etc. An interesting contribution to architectural sociology and education.
Also article on apprenticeship training for the architect, by Frank Lloyd Wright.

BYGGE KUNST (OSLO). *1936. No. 8. P. 163.*
Architecture and geometry. Long illustrated article on geometrical analysis of building æsthetics.

PENCIL POINTS (NEW YORK). *1936. September. P. 465.*
Eliel Saarinen, illustrated biographical article.

ARCHITECTURAL REVIEW. *1936. October. P. 167.*
Sir Thomas Robinson (1700-1777). Biography by Dudley Harbron.

ARCHITECTURAL REVIEW. *1936. September. P. 117.*
J. A. Hansom. Article 6 in series on lesser-known architects of nineteenth century.

Accessions to the Library

1935-1936—XII

Lists of all books, pamphlets, drawings and photographs presented to, or purchased by, the Library are published periodically. It is suggested that members who wish to be in close touch with the development of the Library should make a point of retaining these lists for reference.

Any notes which appear in the lists are published without prejudice to a further and more detailed criticism.

Books presented by publisher for Review marked R.
Books purchased marked P.
**Books of which one copy at least is in the Loan Library.*

ARCHITECTURE

Societies (General)

R.I.B.A.
[Examinations.] Questions set at the . . . examination . . . 1936.—Intermediate, Final, Special Final. 1936.

ARCHITECTURAL ASSOCIATION : SCHOOL OF ARCHITECTURE
Exhibition of students' work. 1935-1936.
pam. 8½″. Lond. [1936.] R.

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Verzeichnis der mitglieder.
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11¼″×8¾″. 192 pp. Lond. : The Studio. 1936. £1 10s. R. & P.

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The 20th century renaissance. A critical essay on recent developments in methods of building. (Thesis for Final Examination, July.)
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KNOOP (DOUGLAS) *and* JONES (G. P.)
A Note on the position and the number of foundation stones. (*From* Miscellanea Latomorum, June.)
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MINISTRY OF HEALTH : CENTRAL VALUATION COMMITTEE
Annual report for . . 1935-36.—Rating and Valuation Acts. 1925 to 1932.
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Proposed building by-laws. (No. 3208.)
pam. 13″. Lond. : P. S. King. 1936. 6d. R.

CHARTERED SURVEYORS' INSTITUTION *and others*
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2nd ed. 1927. *To Loan Library.*

CHARTERED SURVEYORS' INSTITUTION
List of members . . . qualified as quantity surveyors.
pam. 8½″. Lond. 1936.

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Report of annual meeting . . . 1936.
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Lusaka. The new capital of Northern Rhodesia.
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Suggestions and instructions relating to the arrangement and construction of mental hospitals.
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Miners' Welfare Fund. Annual report : 14th, for . . 1935, *etc.* [With plates.]
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The Design of indoor ice skating rinks. (Thesis for Final Examination, July.)
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Shall All Hallows Lombard Street be destroyed? The case for preservation. W. G. Bell and E. Jeffries Davis, eds.
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The Story of Bermondsey parish church.
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A Brief history of the church of St. Mary & St. Ethelburga, Lyminge, Kent.
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The Alban guide to the cathedral and abbey church and its surroundings.
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Presented by the Authors.

HOME OFFICE
*Fire precautions in schools.
9½″. 54 pp. Lond. : H.M.S.O. 1935. 2s. R. & P.

BOARD OF EDUCATION
Educational pamphlets :—
*No. 107. Suggestions for the planning of buildings for public elementary schools.
[New ed.] 7¼″. Lond. : H.M.S.O. 1936. 2s. R. & P.

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Elementary schools. (Thesis for Final Examination, Dec. 1935.)
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(DOMESTIC)

JORDAN (R. F.)
*The Charm of the timber house. With an introd. by S. P. B. Mais and a chapter on building in timber by R. F— J—.
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*Lighting, space-heating and hot water supply in low cost housing.
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[Housing.] Fourth report by the J— C—, being a report upon the Housing Bill [H.L.]. (Consolidation Bills, 1936.)
pam. 9½″. Lond. : H.M.S.O. 1936. 1d. R.

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Housing, England.—The Housing Acts (Form of Orders and Notices) Regulations, 1936, *etc.* (Statutory Rules and Orders, 1936, No. 739.)
pam. 9¾″. Lond. : H.M.S.O. 1936. 1s. 5d. R.

Housing, England.—The Housing Acts (Equalisation Account) Regulations, 1936, *etc.* (Statutory Rules and Orders, 1936, No. 741.)
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Housing, England. Public right of way extinguishment.—The Housing Acts (Extinguishment of P— R— of W—) Regulations, 1936, *etc.* (Statutory Rules and Orders, 1936, No. 740.)
pam. 9¾″. Lond. : H.M.S.O. 1936. 1d. R.

Housing, England. Overcrowding and Miscellaneous Forms.—The Housing Acts (O— and M— F—) Regulations, 1936. *etc.* (Statutory Rules and Orders, 1936, No. 765.)
pam. 9¾″. Lond. : H.M.S.O. 1936. 2d. R.

Housing, England. Abatement of overcrowding.—The Housing Act, 1935 (Operation of Overcrowding Provisions) Order . . . 1936, *etc.* (Statutory Rules and Orders, 1936, No. 1017.)
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Housing Act, 1936. [26 Geo. 5 & 1 Edw. 8, ch. 51.]
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The Reconditioning of rural cottages. (*From* The Surveyor.) (National Housing and T.P. Council.)
dupl. typescript. 13″. Lond. 1936. R.

GOTCH (J. A.)
*The Old halls & manor-houses of Northamptonshire.
11″. x + (vi) + 100 pp. + 157 pls. + folding maps. Lond. : Batsford. 1936. £1 1s. R. & P. (2)

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Modern furnishing and decoration.
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CANTERBURY : CATHEDRAL
Some notes on the cloister shields.
pam. 7″. [Canterbury.] 1936. 6d. P.

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Thesis on Roofs, functional and decorative. (Thesis for Final Examination, July.)
typescript & *Phots.* 13″. 1936.

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Presented by the Author [*L.*]

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COOLE (R. D.), *ed.*
The Arts. Man's quest for beauty. Painting : . . . architecture : *etc.* Sir William Rothenstein, advisory ed. (art). (The Modern Home University *series.*)
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Annual bibliography of the history of British art.
I : 1934. 8½″. xv + 94 pp. Camb. : U.P. 1936. 5s.
Presented by the Institute.

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JAGGARD (W. R.) *and* DRURY (F. E.)
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Bau-entwurfslehre. *Etc.*
11¾″. 298 pp. Berlin : Bauwelt-Verlag. 1936. (£1 11s.). R. & P.

DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH
Building research exhibit. . . . Building Exhibition, Olympia, 1936.
pam. 9¾″. [Lond. : H.M.S.O.] 1936. R.

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UNITED STATES : DEPARTMENT OF COMMERCE—(NATIONAL) BUREAU OF STANDARDS
Design and construction of building exits. (N— B— of S— Misc. pubn. M 151.)
pam. 9¼″. Washington : Govt. Printing Office. 1935. (10 c.) R.

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FILON (L. N. G.)
A Manual of photo-elasticity for engineers.
7½″. xi + 140 pp. Camb. : U.P. 1936. 5s. R.

BRITISH STANDARDS INSTITUTION
B.s.s. (144) for coal tar creosote for the preservation of timber.
Revised ed. 1936. 2s. R.

DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH : BUILDING RESEARCH
Bulletins :
No. 5. The properties of breeze and clinker aggregates, *etc.* F. M. Lea.
Revised ed. 9½″. Lond. : H.M.S.O. 1936. 6d. R.

BRITISH STANDARDS INSTITUTION
B.s.s. (217) for red lead for paints.
Revised ed. 1936. 2s. R.

B.s.s. (272) for red oxides of iron . . . for paints.
Revised ed. 1936. 2s. R.

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COPPER DEVELOPMENT ASSOCIATION
Copper as a mould material. By H. J. Miller. (C— D— A— Publication No. 21.)
pam. 8½″. Lond. 1936. R.

CONSTRUCTION

BRITISH STANDARDS INSTITUTION
B.s.s. (690) for asbestos-cement slates and unreinforced flat sheets and corrugated sheets.
1936. 2s. R.

REYNOLDS (T. J.) *and* KENT (L. E.)
Structural steelwork for building and architectural students.
8½″. xii + 356 pp. Lond. : English Universities Press. 1936. 12s. 6d. R.

DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH : STEEL STRUCTURES RESEARCH COMMITTEE
*Final report, *etc.*
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INSTITUTE OF WELDING
Code of symbols and notations for the defining of . . . welds on drawings. (Draft.)
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FABER (OSCAR)
*Reinforced concrete simply explained.
(2nd ed. Reprint. 1934.) 5s. P.
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MANTHEI (R. A.)
Pioneer development in contemporary structural engineering as applied to reinforced concrete. (Lecture to . . . Liverpool Univ. School of Architecture.)
dupl. typescript. 13″. [L'pool. 1936.] R.

PILKINGTON (G. L.)
The Architectural uses and possibilities of glass. (Lecture to . . . Liverpool Univ. School of Architecture.)
dupl. typescript. 13″ [L'pool. 1936.] R.

BRITISH STANDARDS INSTITUTION
B.s.s. (340) for pre-cast concrete kerbs, channels and quadrants.
Revised ed. 1936. 2s. R.

SANITARY SCIENCE AND EQUIPMENT, PROOFING

BRITISH STANDARDS INSTITUTION
B.s.s. (52) for dimensions of bayonet lamp-caps, lampholders and lampholder-plugs.
Revised ed. 1936. 2s. R.

COAL UTILISATION COUNCIL
The C.U.C. (C— U— C—). Its history and development. 1932-1936.
pam. 8″. [Lond. 1936.] R.

ANTI-NOISE LEAGUE
Leaflets :
No. 9. The reduction of noise in offices, banks, business premises, *etc.*
8¼″. Lond. 1936. R.

ENGINEERING

IRON AND STEEL INSTITUTE
Charter, bye-laws and list of members and associates. (Handbook No. 3.)
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INTERNATIONAL FEDERATION FOR HOUSING AND TOWN PLANNING
Bulletin No. 36 (August).
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Report.
9¾″. 53 pp. + folding map. Croydon. 1927. (3s.) P.

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Town and country planning. Restriction of Ribbon Development Act, 1935. (Memo. T. & C.P. 10.) [With accompanying letter.]
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ALLEN ( ), *Lady, of* HURTWOOD
*How allotments could be made an amenity asset to the community.
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ARCHITECTURE

HISTORY

ARCHER (J. W.)
Vestiges of Old London, a series of etchings from original drawings, *etc.*
fo. Lond. 1851.

ADAM (ROBERT *and* JAMES)
The Decorative work of Robert and James Adam. Being a reproduction of the plates illustrating decoration and furniture from their "Works in Architecture," published 1778-1812. (B. T. Batsford, *publ.*)
fo. Lond. 1901.

MODERN ARCHITECTURAL DESIGNS
Modern architectural designs and details. A monthly publication giving details of exterior and interior woodwork, *etc.*
Vol. ii *only.* N.S. 1-6. fo. New York. 1888-89

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COOKE (A. O.)
* A Book of dovecotes.
sm. 8o. Lond. 1920. *To Loan Library.*

DECORATION, CRAFTS, FITTINGS

TUTHILL (W. B.) *ed.*
Interiors and interior details . . . original designs, *etc.*
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CRACE (JOHN D.)
* The Art of colour decoration, *etc.*
sm. fo. Lond. [1912]. *Extra copy for Loan Library.*

DEGEN (LOUIS)
Les Constructions en bois.
Première partie. sm. fo. Paris. [18—.]

ASSELINEAU ( ) *and* RAMÉE (DANIEL)
Meubles, religieux et civils, conservés dans les principaux monuments et musées de l'Europe. Dessins par A—. Texte par D— R—.
2 vols. fo. Paris. 1874.

ALLIED ARTS

PICTORIAL GALLERY OF ARTS
The P— G— of A—.—Fine Arts.
Vol. ii *only.* fo. Lond. 1847.

BEMROSE (WILLIAM)
Manual of buhl-work and marquetry, *etc.*
3rd ed. 4o. Lond. [18—.]

HURRELL (J. W.)
* Measured drawings of old oak English furniture. Also of some remains of architectural woodwork, plasterwork, metalwork, glazing, etc.
fo. Lond. 1902. *Extra copy for Loan Library.*

COMMITTEE (A) OF MASTERS AND JOURNEYMEN
The London Cabinet-Makers' Union Book of Prices.
4o. Lond. 1811.

BUILDING SCIENCE

HALFPENNY (WILLIAM)
The Art of sound building, *etc.*
2nd ed fo. Lond. 1725.

RONDELET (J.)
Traité théorique et pratique de l'art de bâtir.
8th ed. 5 vols. in 2. text 8o., plates fo. Paris. 1838.

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JEAYS (JOSHUA)
The Orthogonal system of hand-railing, with . . . the construction of stairs.
8o. Lond. 1850.

JONES (JOHN *and* ROBERT)
Handrailing : the square cut. (2nd pt. : . . . by the square cut. By J— J—.)
5th ed. 4o. Lond. [1886.]

MATERIALS

WARD (H. MARSHALL)
Timber and some of its diseases. (Nature series.)
sm. 8o. Lond. 1889.

CONSTRUCTION (CARPENTRY AND JOINERY)

FERRAND (J.)
Constructions en fer et en bois. Charpentes mixtes, *etc.* (Le Charpentier-serrurier au xix^e^ siècle.)
fo. Paris. [18—.]

LOYAU (ACHILLE)
Album de charpentes en bois.
fo. Paris. 1873.

MONCKTON (J. H.)
The National carpenter and joiner. *etc.*
sm. fo. New York. [1873.]

NICHOLSON (PETER)
The Carpenter's new guide : *etc.*
New ed., founded on . . . P— N—'s standard work ; revised by Arthur Ashpitel. Together with Practical rules on drawing, by George Pyne, *etc.*
4o. Lond. 1857.

[ROBISON (*Prof.*) *and* TREDGOLD (T.)]
Carpentry and joinery.—An atlas of engravings to . . . illustrate "Elementary principles of carpentry . . ." (Vol. 182 of the Rudimentary Series.)
2nd ed. 4o. Lond. 1878.

ROUBO ( )
L'Art de la menuiserie.
New ed. by — Dufournet. 5th ed. *With* Supplément, 2nd ed.
fo. Paris. 1883.

STRAUCH (F. A. W.)
Die Arbeiten des Bau-Tischlers. *etc.*
Text *only*. 4o. Berlin. 1866.

WALLIS (N.)
The Complete modern joiner, or a collection of original designs *etc.*
New ed. ob. narrow 4o. Lond. [1772.]

SANITARY SCIENCE

CLARKE (J. WRIGHT)
Plumbing practice.
8o. Lond. 1888.

HELLYER (S. S.)
Principles and practice of plumbing. (Technological handbooks.)
sm. 8o. Lond. 1891.
3rd ed. Lond. 1896.

CHAMBERS (G. F.)
A Digest of the law relating to public health and local government, *etc.*
8th ed. 4o. Lond. 1881.

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FRULLINI (L.)
Panneaux et ornements en bois sculpté, *cover title.*
Ph. prints, mounted, in pfo. sm. fo. Lond. 1884.

R.I.B.A. MAINTENANCE SCHOLARSHIPS IN ARCHITECTURE

The Royal Institute of British Architects announces that the following Maintenance Scholarships have been awarded for the year 1936-1937 :—

An R.I.B.A. Maintenance Scholarship of £100 per annum to Mr. F. A. R. Hill, of Birmingham.

An R.I.B.A. Maintenance Scholarship of £100 per annum to Mr. B. B. Batt, of Lincoln.

An R.I.B.A. (Houston) Maintenance Scholarship of £100 per annum to Mr. P. L. Cleveland, of London.

An R.I.B.A. (Houston) Maintenance Scholarship of £100 per annum to Mr. P. F. Shepheard, of Liverpool.

The *Builder* Maintenance Scholarship of £50 per annum to Mr. J. C. de C. Henderson, of London.

The Ralph Knott Memorial Maintenance Scholarship of £45 per annum at the Architectural Association School of Architecture, awarded to Mr. T. Verity in 1935, has been renewed for a further period of one year.

The R.I.B.A. Maintenance Scholarships of £50 each, awarded to Mr. A. M. Foyle (Bartlett School of Architecture, University of London) and Mr. G. M. Thomas (Leeds School of Architecture), have been renewed and have been increased to £70 each for the Session 1936-1937.

R.I.B.A. (ARCHIBALD DAWNAY) SCHOLARSHIPS. 1936-1937

In accordance with the terms of the will of the late Sir Archibald Dawnay, the Royal Institute of British Architects have awarded three scholarships of £50 for the academic year 1936-1937, one to Mr. J. Mytton, of the Birmingham School of Architecture ; one to Mr. D. P. Thomas, of the Liverpool School of Architecture, University of Liverpool ; and the third to Mr. H. Wharfe, of the Leeds School of Architecture.

Mr. N. P. Thomas and Mr. L. W. D. Wall, of the Welsh School of Architecture, The Technical College, Cardiff, who were awarded scholarships of £50 each for the academic year 1935-1936, have been granted renewals of their scholarships for the year 1936-1937.

The scholarships are intended to foster the advanced study of construction and the improvement generally of constructional methods and materials, and their influence on design.

Correspondence

JUNIOR MEMBERS' COMMITTEE

23 South Molton Lane,
Davies Street, London, W.1.
24.9.36

To the Editor, JOURNAL R.I.B.A.

SIR,—While I was very interested in, and agree with, Mr. Livesay's letter on the Report of the Junior Members' Committee in your issue of 18 July, I am surprised that, in spite of the holiday season, no one has made any further comments.

Such further comments might have been expected under two main heads—first, comments in detail on the work and action taken by the Junior Members' Committee on their terms of reference and, secondly, comment of a much more general nature on the exact function of and necessity for the Junior Members' Committee.

Of the comments under the first heading the most general might well have been the lack of any apparent attempt to collect the views of those junior members whom the Junior Members' Committee represent. The Informal General Meetings may give the Junior Members' Committee the views of the junior members on certain subjects, but it is questionable whether these are necessarily the "views, activities and interests of the younger members of the profession" for which the Council have specifically asked.

Further, no effort appears to have been made to obtain even a vague idea as to the approximate percentage of students, salaried members, members in private practice, etc., among the junior members. Such a statistical survey would be of great interest and use, although I am fully aware that it cannot be done, for certain technical reasons, with any complete accuracy.

It is, however, under the second heading of the more general comments that the most important points lie. Let it first be remembered that the Council have decreed that all members of the Institute under the age of 35 shall be designated "Junior Members," and that these members presumably now have views expressed on their behalf to the Council by an appointed and not an elected committee. A review of the various possible methods of appointing such a committee reveals even more practical difficulties to be encountered than that of appointment by the Council, obvious as some of the drawbacks to this method may appear. Many of the junior members, especially those in their early thirties and in their own practices, might well ask themselves whether they prefer to be represented by such a committee or let those younger members of the Council and Standing Committees safeguard their interests. That the R.I.B.A. is run for the good of the profession by voluntary council and committees and that the Junior Members' Committee makes, or should make, an excellent training ground for these must be borne in mind. But unlike a tree, which it is easier to cut down than to grow, such a committee is easier to start than to terminate. In consequence as its continuance seems likely, at the end of its first year of existence appears the time to review the position with no little care. It is obvious that far too many junior members are completely unconcerned with the existence or actions of this committee or their own designation of "Junior Member," a term which is perhaps unfortunate in its implications. A very large number of junior members have full voting powers for the Council, etc., and may, and do, serve on it and its subsidiary committees. Surely, therefore, the term "Younger" or "Young" members would have been preferable. "To keep the Council informed of the views, activities, and interests of the *younger* members of the profession" (my italics), runs the third term of reference of the Junior Members' Committee. No mention of the word junior, and it is difficult to see why it need have come in.

Consideration might also well be given as to whether the age of 35 for a junior member is not too old—especially if the title "Junior" is to be retained. It would be interesting to know what considerations prompted its choice rather than, say, 30.

Before concluding this long letter, let me make this clear. It may well be that the Junior Members' Committee are doing the work for which they have been appointed with conspicuous success—the information they presumably have given to the Council with regard to the "views, activities and interests of the younger members of the profession" may be excellent. It would not appear, however, unreasonable in the circumstances for those members of the Institute who, willingly or not, are designated "Junior Members" to have rather more details than were contained in the report of the activities of a committee who present their views to the Council. And will the next meeting of the Junior Members' Committee have on their agenda "consideration of the points in Mr. Henniker's letter to the JOURNAL and preparation of notes thereon for submission to the Council"? I wonder!

Yours, etc.,
RICHARD HENNIKER [*A.*]

ENGLISH ARCHITECTS AND CATHERINE THE GREAT

59 Sutton Road,
Erdington.
13.8.36.

To the Editor, JOURNAL R.I.B.A.

SIR,—The account in the current number of the *Journal* of Charles Cameron and his work in Russia is interesting, as it shows the esteem in which English architects were held by the Empress Catherine II. Another English architect to whom she offered employment was William Hollins, of Birmingham, but as Hollins refused to go to Russia, the only work he did for her was to make the plans for the Royal Mint in St. Petersburgh. At the time of his death it was said of Hollins, and perhaps truly, that "having chosen a provincial rather than a metropolitan residence, his rare and varied attainments were never duly appreciated."

Faithfully yours,
BENJAMIN WALKER, F.S.A. [*A.*]

Obituaries

EDWARD HUDSON [*Hon. A.*]

The appreciation of architecture owes a great deal to Mr. Edward Hudson, Hon. A.R.I.B.A., the founder of *Country Life*, who died on 17 September, in his eighty-second year. Since its inception in January 1897 the paper has continued to reflect Mr. Hudson's broad and essentially English tastes, and until recently was produced under his constant personal supervision.

To compare the paper as it is to-day with its early issues provides an amusing contrast, but also an instructive one, the enormous development in appreciation that is revealed being largely a result of Mr. Hudson's work through *Country Life*. From the outset the central feature of the paper has been an illustrated article on a country house. The first of the long series was on Sandringham, and its immediate successors displayed simply a generalised picturesque and romantic interest in "stately homes." But before long greatly improved photography, and informed judgment of architectural values began to make themselves seen. For this Mr. Hudson was indebted first to Charles Latham, a photographer of genius, and after about 1905 to H. Avray Tipping. Later Lawrence Weaver joined the staff and initiated the series of Lesser Country Houses and widened the scope of the paper to include the work of the younger architects.

Of these the foremost was Sir Edwin Lutyens, a personal friend of Mr. Hudson, for whom he had designed the Deanery Garden, Sonning, soon after 1902, then the restoration of Lindisfarne and the decoration of his London house in Queen Anne's Gate (No. 15). Most of Lutyens' houses were described and were later published in Weaver's noble volume "Houses and Gardens of E. L. Lutyens." Mr. Hudson continued all his life to be one of Lutyens' greatest admirers and after his marriage in 1929 went out to Delhi to arrange the photography of the Viceroy's House.

The beginning of the publication of the series of volumes, "English Homes," edited by Tipping, in 1920 marked an important advance over the magnificently pictorial, but not very scholarly series of Latham's "In English Homes." Mr. Hudson's share in these valuable publications, which enshrined in accessible form material previously published in the paper—was fundamentally that of Chairman of the *Country Life* Company. He personally admired the buildings illustrated, considered that they should be published for the benefit of architecture and had, largely through *Country Life*, created a public demand for expensively produced books on architecture. In the same way he undertook the publication of what is, perhaps, the finest work of its kind produced in this country: Arthur Bolton's "Work of Robert and James Adam."

"The Dictionary of English Furniture," edited by the late Percy Macquoid and Ralph Edwards, was another monumental undertaking of Mr. Hudson's, reflecting his insistence on the best of its kind in whatever sphere his tastes and energies were directed. Through another of his papers, "Homes and Gardens," in which he took a close interest, he exerted a healthy influence on contemporary design and furnishing.

In this notice no reference has been made to the other sides of Mr. Hudson's interests—gardening, agriculture, the preservation of the countryside, and so on.

In all he was guided by remarkably sound natural intuition and a sure judgment of men. He wrote scarcely anything himself and indeed had not much technical knowledge. But he had the gift of placing his confidence securely with those who had, of firing them with his determination and, above all, of backing their efforts with the organisation he had created. Like all good leaders he knew how to delegate responsibilities and, in his declining years, had the satisfaction of seeing *Country Life* continuing on its course, although his hand was no longer on the tiller.

CHRISTOPHER HUSSEY [*Hon. A.*]

ALBERT LOUVET [*Hon. Corr. Member.*]

We regret to record the death at Versailles on 30 June 1936 of Monsieur Albert Louvet, an Honorary Corresponding Member of the Institute since 1921. He was 75 years old. M. Louvet held a prominent position in the architectural world in France. He was Honorary Chief Architect of Civic Buildings and the National Palaces, Divisional Architect for the City of Paris and President of the Office Général des Bâtiments et des Travaux Publics.

He was buried on 3 July in the family vault in the Gonards Cemetery.

JOHN CLARKE [*F.*]

We regret to record the death on 7 June of Mr. John Clarke, the oldest Fellow on the active list.

Mr. Clarke was born in 1852 and was educated at Haversham Grammar School and King William's College, I.O.M. He served his articles with his grandfather and his father and became his father's partner after his grandfather's death in 1872. In 1909 he was joined by Mr. P. J. Clarke, his son, by whom he is succeeded in the practice. The firm was founded in 1853.

Mr. Clarke designed Messrs. W. & R. Jacob's biscuit factory, St. Paul's Eye Hospital, and numerous other hospitals and office buildings, but his chief work was on flour mills. He was responsible for over forty of them, and he designed many of the largest flour mills in this country, including the first mill built for the roller process. He was one of the first users of reinforced concrete and was largely responsible for the evolution of the modern mill building.

Mr. Clarke was for many years a member and for some time chairman of the Bebington Local Board, and for twenty years was an officer in the Cheshire Engineer Volunteers. He was an expert on the tides and channels of the River Mersey and several times gave evidence in Parliamentary enquiries in connection with these.

CHARLES ALFRED GEEN [*Ret. A.*]

Mr. C. A. Geen, who died on 16 May, was born in 1868 and was educated at Roath College, Cardiff, and in Paris. He became an Associate in 1909 and retired this year.

MRS. WINSTON WALKER

We regret to record the death on 10 September 1936 of Mrs. Williamina K. Walker, wife of Mr. Winston Walker [*A.*].

Notes

PRESIDENT'S ENGAGEMENTS

On 28 September the President attended the reception given by the Mayor and Mayoress of Holborn, and on 12 October he attended " The Bond " dinner, and on 15 October the Devon and Cornwall Society Annual Dinner.

The following are the President's forthcoming engagements : he will attend the dinner of the Institute of Arbitrators on 27 October, the Colchester Oyster Feast on 22 October, and he will open the Civic Centres Exhibition at Newport on 12 November.

R.I.B.A. DRAMATIC SOCIETY

The R.I.B.A. Dramatic Society is presenting " Liliom," by Francis Molnar, at 8.30 p.m., on Thursday, 26 November, Friday, 27 November, and Saturday, 28 November, in the Henry Jarvis Hall, at 66, Portland Place.

The production is now in rehearsal under the direction of Mr. Frank Burrell, who produced a very successful amateur performance at the Royal College of Art. The play itself, which is about a " rough diamond," with a " soft centre," has been translated from the Hungarian by Benjamin J. Glazer, an American.

Tickets, price 5s. and 3s. 6d., numbered and reserved, and 2s. 4d. unreserved, can be obtained by members of the R.I.B.A., from Miss E. Caldicott at the Architectural Association, the R.I.B.A. office or from any member of the dramatic society.

Will members of the Institute who are interested in dramatic work, whether as actors, authors, designers, stage workers, publicity agents or anything else, make themselves known to the Hon. Secretary, Miss G. W. M. Leverkus, 5 Gower Street, W.C.1, with a view to becoming members of the Society ?

THE R.I.B.A. HENRY L. FLORENCE BURSARY

A Sum of £350

Attention is called to the fact that the last date for the receipt of applications for the Bursary is 1 December 1936.

Candidates must be members of the Royal Institute of British Architects. The Bursary is offered in alternate years and is of the value of £350. The general object is the study of the Greek and Hellenistic architecture of the Mediterranean basin with a view to making available for architects, from an architectural standpoint, the results of the more recent archæological researches.

The holder of the Bursary is required to spend a period of not less than six months in travel and research.

Applications must be made in writing, accompanied by testimonials, and a brief outline of the candidate's intention regarding his proposed studies must be included. Candidates should state their qualifications, age, architectural training, works executed and publications, if any. Applications should be sent so as to reach the Secretary R.I.B.A., 66 Portland Place, London, W.1, on or before 1 December 1936.

INTERMEDIATE EXAMINATION

The following are the dates on which the forthcoming R.I.B.A. Intermediate Examination will be held :

6, 7, 9, 10, and 12 November 1936.

(Last day for receiving applications, 6 October 1936.)

BRITISH SCHOOL AT ATHENS JUBILEE

Mr. H. M. Fletcher attended the Jubilee Celebration of the British School at Athens on 13 October and represented the R.I.B.A.

FINAL EXAMINATION

Alternative Problems in Design

The following subjects have been set as the design problems for the final examination :—

No. 19 (*a*) A village Inn.
(*b*) Working drawings of the above design
date for submission 26 February 1937.

No. 20 (*a*) A School of Geographical Studies.
(*b*) Working drawings of the above design
date for submission 30 April 1937.

No. 21 (*a*) A Science Block to a Public School.
(*b*) Working drawings of the above design
date for submission 30 June 1937.

No. 22 (*a*) A Housing Scheme.
(*b*) Working drawings of the above design
date for submission 31 August 1937.

No. 23 (*a*) A Musicians' Club.
(*b*) Working drawings of the above design
date for submission 29 October 1937.

No. 24 (*a*) A Monastery.
(*b*) Working drawings of the Monastery
date for submission 31 December 1937.

Programmes and full particulars of the conditions governing the submission of drawings can be obtained free on application to the Secretary of the Board of Architectural Education, 66 Portland Place.

C.P.R.E., R.I.B.A. & I.O.B. ADVISORY PANELS

Herefordshire

The Birmingham and Five Counties Architectural Association has set up an Advisory Panel for the County of Herefordshire, consisting of three architects, a builder and two architect representatives of the Birmingham Association.

Huntingdonshire Joint Planning Committee

This Committee made a request that the Panel Secretary should attend a meeting of the Committee in Huntingdon, and explain the working of the Panels. Mr. Jack attended on 29 September and as a result the Committee unanimously accepted the service of the Panels and gratefully acknowledged the assistance proffered by the following Architects : S. Inskip Ladds, Esq. [*A.*], Wm. A. Lea, Esq. [*F.*], W. Parker Dyson, Esq., M.A. [*A.*], and E. B. Parkinson, Esq. [*L.*].

C.P.I.A. CONFERENCE

It has been decided that the next conference of the C.P.I.A. shall be held in Paris in 1937. It is hoped to publish the exact dates in a few months' time.

CANTERBURY SCHOOL OF ARCHITECTURE

SESSION 1936-37

On Wednesdays and Thursdays, from 8 October to 15 April, Mr. R. Goulburn Lovell [*F.*] will give twelve lectures on Central Europe, where he has recently made an extensive tour. The lectures are open to the public as well as to students attending the course of study organised by the Canterbury District Chapter of the South-Eastern Society. The fee for the lectures is five shillings and further particulars can be had from Mr. H. Campbell Ashenden [*F.*], 23 Watling Street, Canterbury.

COMPETITION BETWEEN FRENCH AND BRITISH SCHOOL STUDENTS

Owing to an error the initials of the British winner of this Competition were incorrectly given in the notice sent out and appeared incorrectly in the July issue of the JOURNAL. The winner was Mr. Bernard T. Taylor and not J. T. Taylor, as stated.

NATIONAL HOUSING AND TOWN PLANNING CONFERENCE

An important national housing and town planning conference will be held at Harrogate during the week-end 27-30 November under the auspices of the National Housing and Town Planning Council. The conference will be attended by a large number of delegates from local authorities in Great Britain, and will be addressed by Sir Kingsley Wood, the Minister of Health, and also by other prominent housing reformers and town planning experts.

The principal subjects for discussion will be the administration of the Housing Acts of 1930 and 1935, the Town and Country Planning Act, 1932, and the Restriction of Ribbon Development Act, 1935. In view of the present widespread operations in connection with the clearance of slums, the abatement of overcrowding, and the provision of the necessary rehousing accommodation, the conference will undoubtedly be of especial interest.

Full particulars can be obtained from Mr. John G. Martin, Secretary, National Housing and Town Planning Council, 41 Russell Square, London, W.C.1.

SIR JOHN SOANE MUSEUM

The Sir John Soane Museum, 13 Lincoln's Inn Fields, W.C.2, a most interesting house and art collection, is open free on Thursdays and Fridays in October from 10.30 to 5, and in November from 10.30 to 4; the opening day was Thursday, 1 October.

ALLIED SOCIETIES

SOUTH AUSTRALIAN INSTITUTE OF ARCHITECTS

ANNUAL REPORT, 1935-36

The Council of the S.A.I.A. recently presented their 50th Annual Report, from which the following extracts have been taken.

The membership is now 88 (29 Fellows, 56 Associates, and 3 Hon. Members); in addition there are 17 registered students. Eleven ordinary Council meetings were held during the year.

The Council has undertaken to publish in the *Australian Homes and Gardens* each month an example of architectural work by a member of the Institute which is considered to be worthy of publication, and likely to bring credit to the designer and to the profession as a whole. And arrangements have been made with R.A.I.A. for the publication in *Architecture* of articles and photographs relating to buildings of importance that may be in hand or recently completed.

The Institute was approached by the State Centenary Committee to make arrangements for the preparation of a design for a Centenary Memorial to be erected at Glenelg and commemorating the Foundation of the State and the arrival of Governor Hindmarsh on the *Buffalo* and of Colonel Light on the *Rapid*.

The Committee agreed to allow the Institute to conduct a competition amongst its members. The selected design was that submitted by Mr. G. Beaumont Smith, who has been commissioned by the Centenary Committee to be architect for the memorial.

A proposal to introduce the quantity surveying system in South Australia has been given consideration by the Council. A special Committee has prepared a report, which will form the basis of further enquiry and discussion.

The President was engaged by the Government to report on the plans and specifications prepared for the completion of Parliament House. Some suggestions conducive to economy were adopted and have been embodied in the design now under construction.

THE ROYAL INSTITUTE OF THE ARCHITECTS OF IRELAND

A council meeting of the above body was held at 8 Merrion Square, the President (Mr. H. Allberry) in the chair. There were also present: Messrs. Edwin Bradbury, F. Hayes, J. V. Downes, W. H. Howard Cooke, R. M. Butler, H. V. Millar, C. A. Harrington, Louis F. Giron, Vincent Kelly, T. F. Strahan, T. J. Byrne, James H. Webb, and R. C. Keefe (Hon. Secretary).

Letters were read and noted from the Local Appointments Commission, Department of Industry and Commerce in connection with the representation of the architectural profession on the Industrial Research Council, and from the Secretary, Chartered Surveyors' Institution.

It was reported that at the general meeting the draft proposed revisions in the Institute's Articles of Association and Bye-laws with minor amendments were approved, and the Hon. Secretary was requested to forward the draft to the legal advisers for the necessary action.

An interim report from the special committee appointed to consider revisions in the form of contract drafted by the Saorstat Eireann Federation of Building Trades Employers was read and approved.

It was resolved that queries about qualifications of candidates for local appointments should in future be automatically referred to the Professional Practice Committee.

Mr. Louis F. Giron was unanimously re-elected to represent the Institute on the National Monuments Advisory Council.

Several applications for Fellowship were approved and an application for reinstatement as member was deferred.

The Hon. Treasurer having submitted his monthly statement of accounts the meeting terminated.

SOUTH-EASTERN SOCIETY

Annual General Meeting

The annual general meeting of the above Society was held at Shoreham Airport on 20 June by invitation of Earl Amherst, on behalf of the three municipalities of Brighton, Hove and Worthing. The following officers were elected for the ensuing year :—

President, R. Goulburn Lovell, A.T.P.I. [*F.*] ; Vice-Presidents, C. R. B. Godman [*F.*] (Brighton Area), H. Anderson [*F.*] (Canterbury area), T. Graham Crump [*L.*] (Croydon area), A. J. Stedman [*F.*] (Guildford area), Stanley Philpot [*F.*] (Tunbridge Wells area) ; Hon. Treasurer, Cecil Burns [*F.*] ; Hon. Secretary, Colin Hay Murray [*F.*]

The report of the Council for the year ending June 1936, was presented to the meeting and carried unanimously. Balances in hand amounted to £480 after spending sums amounting to £214 on education. The grant from the R.I.B.A. has been increased by about £25, and membership has also increased. Eight Students have passed the R.I.B.A. Inter and Final Examinations. A number of lectures had been given which had been much appreciated, and The Advisory Panel System and the Consultative Board of Architects and Builders have been working well. The President and members representing the Chapters had attended the Allied Secretaries' Meeting at the R.I.B.A. Twelve members of the Society had works accepted for this year's Academy, and a Travelling Exhibition of Members' Works is starting at Brighton this month.

SOUTH WALES INSTITUTE

Visit to Sully Tuberculosis Hospital

The Tuberculosis Hospital at Sully was visited on the afternoon of Tuesday, 7 July, by a large party of members of the Central Branch of the South Wales Institute of Architects, the Cardiff Civic Society and the Welsh School of Architecture, the Technical College, Cardiff.

The visitors were divided into three groups and were conducted round the building by Dr. William Davies, the Medical Superintendent, Dr. Dillwyn Thomas, and the Assistant Matron, Sister George. The members of the party were much impressed by the skilful planning of the building and by its fittings and equipment. Mr. John Powell, of the Executive Committee of the Cardiff Civic Society, expressed the thanks of the visitors, and Dr. William Davies responded.

Membership Lists

During the month of July the following were enrolled as Probationers of the Royal Institute.

Adams : Bernard Charles, Dorset Guest House, Dover Street, Ryde, I.O.W.

Aish : Charles Clement, 40 Court Way, North Acton, W.3.

Altham : George Bernard, 79 Lancaster Crescent, Horffields, Newcastle-under-Lyme, Staffs.

Attwood : Anthony Cecil, Downside, West Town, near Bristol.

Balaporia : Shianax Rattanshaw, Jer Baug, C. Block No. 15, Byculla, Bombay.

Bay : Peter Lauritz Hansen, 90 Hereford Road, London, W.2.

Beattie : George Copeland, "Dunnottar," Russell Place, Selkirk.

Begbey : David Charles, 60 Village Way, Beckenham, Kent.

Bell : David Carroll, 5 Millicent Terrace, Portadown, N. Ireland.

Berryman : Arthur Harold, 10 English Street, Armagh, N. Ireland.

Birch : Albert, Kildare, 60 Green End Road, Cambridge.

Boyt : Peter Frederick Nicholson, 18 Ella Road, Crouch Hill, N.8.

Brady : William MacDonald, 3 Park View, Victoria Road, Cork.

Bremner : Alexander, 75 Marlborough Avenue, Hull.

Brown : Thomas Frank, 3 High Park, Newthorpe, Notts.

Bull : John Edward, 30 Welling Way, Welling, Kent.

Bundy : Kenneth Douglas, 132 Demesne Road, Wallington, Surrey.

Carpenter : John Trembath, Widegates, Muller Road, Bristol, 5.

Chopin : Francois St. John, 42 Moray Place, Edinburgh.

Christofides : Costas, c/o L.R.O., Nicosia, Cyprus.

Connor : George Stanley Wordsworth, 7 Kirkstall Mount, Kirkstall, Leeds.

Coombe : Anthony Arthur, 38 Staveley Road, Chiswick, W.4.

Corr : Francis Michael, 11 Melrose Terrace, Waterside, Londonderry, N. Ireland.

Crocker : Anthony Simpson, "Crestwood," Raynham Villas, Stoke, Plymouth.

Davies : Evan Austin, "Sunny Side," Festiniog, North Wales.

Davis : Bernard Roderick, 3 Flat, 18 Lorac Road, Oxton, Birkenhead, Cheshire.

Davis : Guy, 17 Polwarth Gardens, Edinburgh, 11.

Dodds : Douglas, Wellbank Place, Monifieth, Angus.

Dorward : James Low, The Haven, Bonneville Road, Clapham Park, S.W.4.

Dyer : Allan John, 86 Tweedy Road, Bromley Kent.

Eccles : Eric James, 13 Brompton Avenue, Liscard, Wallasey, Cheshire.

Elliott : William Heditch Spicer, 180 Park Drive West, Blackpool.

Foyster : Harry, 33 Devonshire Street, New Whittington, Chesterfield.

Frost : Fergus Howard, 5 Chesterfield Road, St. Andrew's Park, Bristol, 6.

Gedrych : Thomas David, 132 Lake Road East, Cardiff.

Gibson : Ernest, Windy-ridge, 85 Marcetter Road, Nuneaton.

Goalen : Gerard Thomas, La Casita, Ince Avenue, Great Crosby, Liverpool, 23.

Goodbody : Hugh Nicholson, Woodsdown, Lisnagry, Co. Limerick

Gorst : Henry, 15 Dorset Road, Preston, Lancs.

Gostling : Gerald Arthur, 56 Muriel Road, Eaton, Norwich.

Gover : John James, 20 Queen Street, Plymouth.

Green : Trevor Curzon, "Glendower," Greenway Road, Runcorn.

Haskell : Ronald Clair, Lower Woodlands, Green Lane, Queensbury, Bradford, Yorks.

Heptonstall : Donald, 34 Eardley Road, Lower Heysham, Morecambe, Lancs.

Hutchinson : Mark Hanley, 4 Meads Street, Eastbourne.

Inglis : Alick Walter Gordon, Kilminning, Crail, Fife.

Laver : Leonard Courtney, St. George's College, Crawley, Western Australia.

Lewis : Jack Eastwood, 28 Elphinstone Road, Southsea, Hants.

Looker : Charles George, "St. Clair," 114 Latchmere Road, Kingston-upon-Thames.

Lowden : Douglas James, 20 Ellingham Road, Shepherds Bush, W.12.

Ludlow : Basil Godfrey, Ingress Tavern, Knockhall Road, Greenhithe, Kent.

Martin : Walter Frederick William, 8 Hosker Road, West Southbourne, Bournemouth, Hants.

Mason : Andrew, 14 Wallace Street, Kilmarnock, Scotland.

Matthews : Albert Edward, Westwood, 22 Bingham Road, Croydon, Surrey.

Matthews : Gordon Edward, 85 Gleneagle Road, Streatham, S.W.16.

McDonald : Angus, Tir na'n Oge, Wrington, Bristol.

Morgan : (Miss) Mary Vivienne, Barclays Bank House, Briton Ferry, Neath, Glam.

Morley : Donald Young, "Lozells," 37 Stanley Road, Halifax, Yorks.

Oates : John Rollinson, 54 Blyth Road, Worksop, Notts.

Otterburn : Rowland, 1 Pensher Street, Sunderland, Co. Durham

Painell : Sidney John, 9 Kipling Road, Bexleyheath, Kent.

Parsons : Alan George, 56 Lodge Drive, London, N.13.

PERRY : STANLEY, 123 Dacy Road, Anfield, Liverpool, 5.
PULLIN : RONALD GEORGE, Station House, Lodge Hill, Westbury, Wells, Somerset.
RAYMENT : DONALD IAN, 35 South Park Drive, Seven Kings, Essex.
RODHAM : KENNETH LONSDALE, 25 Bath Terrace, Gosforth, Newcastle-on-Tyne, 3.
ROEBUCK : JOHN, "Southview House," Quick Edge Road, Mossley, near Manchester.
SANDERS : TREVOR TILSON, "St. Annes," Chertsey Lane, Staines.
SHINDE : SAMBHAJI RAOJI, Aurora House, Hughes Road, Bombay, India.
SIDWELL : NORMAN, 289 Leeds Road, Newton Hill, Wakefield.
SIMPSON : GEORGE GREGORY, 60 Clarence Road, Windsor, Berks.
SKELTON : WILLIAM RONALD, 1 Foster Street, Kinver, Staffs.
STATHER : ROY, 14 Heathcote Street, Hull.
SYKES : FRED OLIVER, 19 Chandos Avenue, Leeds, 8.
TAYLOR : PERCY, 90 Dacy Road, Liverpool, 5.
THOMAS : JAMES LEWIS, 25 Crescent Street, Newtown, Mont.
TITHERLEY : PHILIP, 30 Hillcrest Road, Great Crosby, Liverpool, 23.
VAUGHAN : CHARLES LAWRENCE, 11 Church Avenue, Southall, Middx.
WALKER : DAVID EARLE, The Hermitage, S. Cave, Brough, East Yorks.
WARD : HARRY BARKER, 39 St. Michael's Road, Great Crosby, Liverpool, 23.
WESTON : CHARMIAN WILSON, Barlby Hall, Selby, Yorks.
WHITTAKER : JAMES BARKER, 78 Park Drive, Colne, Lancs.
WILLIAMSON : STEPHEN SHIRLEY, 18 College Road, Epsom, Surrey.
WILSON : ALBERT STEPHENSON, 19 Cairnesmore Avenue, Farringdon Park, Preston.
WILSON : STUART ANTHONY, 2282 Belgrave Avenue, N.D.G., Montreal, Canada.

Notices

THE INAUGURAL GENERAL MEETING MONDAY 2 NOVEMBER 1936 AT 8.30 P.M.

The Inaugural General Meeting of the Session 1936-1937 will be held on Monday 2 November 1936 at *8.30 p.m.* for the following purposes :—

To read the Minutes of the Twelfth General Meeting of the Session 1935-1936 held on 22 June 1936;

Mr. Percy Thomas, O.B.E., President, to deliver the Inaugural Address of the Session ;

To present the London Architecture Bronze Medal, 1935, to Mr. R. H. Uren [*A.*] for his building, The Town Hall, Hornsey.

Evening Dress optional.

EXHIBITIONS OF DESIGNS OF STUDENTS EXEMPTED FROM THE R.I.B.A. INTERMEDIATE AND FINAL EXAMINATIONS

The Designs of Students of Schools of Architecture recognised for exemption from the R.I.B.A. Final Examination are being exhibited at the R.I.B.A., 66 Portland Place, W.1, from 14 to 19 October 1936 inclusive between the hours of 10 a.m. and 8 p.m. (Saturday 10 a.m. and 5 p.m.).

The Designs of Students of Schools of Architecture recognised for exemption from the R.I.B.A. Intermediate Examination will be exhibited at the R.I.B.A. from 23 to 29 October 1936 inclusive between the hours of 10 a.m. and 8 p.m. (Saturday 10 a.m. and 5 p.m.).

ANNUAL SUBSCRIPTIONS

Members' subscriptions, Students' and Subscribers' contributions became due on 1 January 1936.

The amounts are as follows :—

Fellows	£5 5 0
Associates	£3 3 0
Licentiates	£3 3 0
Students	£1 1 0
Subscribers	£1 1 0

NOTE.—By a resolution of the Council dated 20 July 1931 the subscriptions of R.I.B.A. members in the transoceanic Dominions who are also members of Allied Societies in those Dominions are reduced to the following amounts as from 1 January 1932 :—

Fellows	£3 3 0
Associates	£2 2 0
Licentiates	£2 2 0

COMPOSITION OF SUBSCRIPTIONS FOR LIFE MEMBERSHIP

Fellows, Associates and Licentiates of the Royal Institute may become Life Members by compounding their respective annual subscriptions on the following basis :—

For a Fellow by a payment of £73 10s. (70 guineas).

For an Associate or Licentiate by a payment of £44 2s. (42 guineas), with a further payment of £29 8s. (28 guineas) on being admitted as a Fellow.

In the case of members in the transoceanic Dominions who are members of Allied Societies in those Dominions, the following basis will operate :—

For a Fellow by a payment of £52 10s. (50 guineas).

For an Associate or Licentiate by a payment of £31 10s. (30 guineas), with a further payment of £21 (20 guineas) on being admitted as a Fellow.

Provided always that in the case of a Fellow or Associate the above compositions are to be reduced by £1 1s. per annum for every completed year of membership of the Royal Institute after the first five years, and in the case of a Licentiate by £1 1s. per annum for every completed year of membership of the Royal Institute, with a minimum composition of £6 6s. in the case of Fellows and £4 4s. in the case of Associates and Licentiates.

NEW CLASSES OF RETIRED MEMBERS

Under the provisions of the revised Bye-law No. 15 applications may now be received from those members who are eligible for transfer to the class of "Retired Fellows," "Retired Associates," or "Retired Licentiates."

The revised Bye-law is as follows :—

"Any Fellow, Associate or Licentiate who has reached the age of fifty-five and has retired from practice may, subject to the approval of the Council, be transferred without election to the class of 'Retired Fellows,' 'Retired Associates,' or 'Retired Licentiates,' as the case may be, but in such case his interest in, or claim against the property of, the Royal Institute shall cease. The amount of the annual subscription payable by such 'Retired Fellow,' 'Retired Associate' or 'Retired Licentiate' shall be £1 1s. 0d., or such amount as may be determined by resolution of the Council, excepting in the case of those who have paid subscriptions as full members for thirty years, and who shall be exempt from further payment. A 'Retired Fellow,' 'Retired Associate,' or 'Retired Licentiate' shall have the right to use the affix of his class with the word 'Retired' after it, shall be entitled to receive the JOURNAL and *Kalendar*, shall be entitled

to the use of the Library, and shall have the right to attend General Meetings, but shall not be entitled to vote. A 'Retired Fellow,' 'Retired Associate' or 'Retired Licentiate' shall not engage in any avocation which in the opinion of the Council is inconsistent with that of architecture. Nothing contained in this Bye-law shall affect the rights of persons who at the date of the passing of this Bye-law are members of the classes of 'Retired Fellows' and 'Retired Members of the Society of Architects.'"

ARCHITECTS' INDEMNITY INSURANCES

The attention of members is particularly drawn to the important announcement with regard to Architects' Indemnity Insurances which was contained in the JOURNAL columns on page 843 of the issue of the JOURNAL for 27 June.

ASSOCIATES AND THE FELLOWSHIP

Associates who are eligible and desirous of transferring to the Fellowship are reminded that if they wish to take advantage of the election to take place on 11 January 1937 they should send the necessary nomination forms to the Secretary R.I.B.A. not later than Saturday, 7 November 1936.

LICENTIATES AND THE FELLOWSHIP

The attention of Licentiates is called to the provisions of Section IV, Clause 4 (*b*) and (*cii*), of the Supplemental Charter of 1925. Licentiates who are eligible and desirous of transferring to the Fellowship can obtain full particulars on application to the Secretary R.I.B.A., stating the clause under which they propose to apply for nomination.

THE R.I.B.A. REGISTER OF ASSISTANTS SEEKING ENGAGEMENTS

Members and Students of the R.I.B.A. and the Allied and Associated Societies are reminded that a Register of Assistants seeking engagements is kept at the offices of the Royal Institute.

An assistant seeking employment should obtain from the Secretary R.I.B.A. the necessary form (to be filled up in duplicate) on which particulars must be given as to the applicant's age, qualifications, salary required, references, etc.

The application will hold good for one month from the date of receipt, after which it must be renewed unless the applicant has meanwhile obtained employment.

Architects, whether members of the R.I.B.A. or not, will be furnished on application with the names and addresses of persons desiring employment as assistants, improvers or clerks of works as the case may be. Architects applying for assistants should give the following particulars of their requirements: (1) whether temporary or permanent engagement; (2) junior or senior assistants; (3) particulars of duties and style of work; (4) salary offered.

THE RECEPTION OF NEW MEMBERS AT GENERAL MEETINGS

It has been decided by the Council to modify the procedure for the introduction and reception of new members at General Meetings. In future new members will be asked to notify the Secretary beforehand of the date of the General Meeting at which they desire to be introduced and a printed postcard will be sent to each newly elected member for this purpose. They will be asked to take their seats on arrival in a special row of seats reserved and marked for them. At the beginning of the meeting on the invitation being given to present themselves for formal admission each new member will be led up to the Chairman by one supporter, and the Chairman will formally admit them to membership.

The introduction and reception of new members will take place at any of the forthcoming Ordinary General Meetings of the Royal Institute with the *exception of the meetings on the following dates*:—

2 November 1936 (Inaugural General Meeting).
25 January 1937 (Presentation of Medals and Prizes).
12 April 1937 (Presentation of the Royal Gold Medal).

OVERSEAS APPOINTMENTS

When members are contemplating applying for appointments overseas they are recommended to communicate with the Secretary R.I.B.A., who will supply them with any available information respecting conditions of employment, cost of living, climatic conditions, etc.

CESSATION OF MEMBERSHIP

Under the provisions of By-law 21 the following has ceased to be a member of the Royal Institute:—

As Associate

William Haigh Harral.

Competitions

The Council and Competitions Committee wish to remind members and members of Allied Societies that it is their duty to refuse to take part in competitions unless the conditions are in conformity with the R.I.B.A. Regulations for the Conduct of Architectural Competitions and have been approved by the Institute.

While, in the case of small limited private competitions, modifications of the R.I.B.A. Regulations may be approved, it is the duty of members who are asked to take part in a limited competition to notify the Secretary of the R.I.B.A. immediately, submitting particulars of the competition. This requirement now forms part of the Code of Professional Practice in which it is ruled that a formal invitation to two or more architects to prepare designs in competition for the same project is deemed a limited competition.

COMPETITION FOR A DESIGN FOR THE RECONSTRUCTION OF THE MAIN ENTRANCE TO SUTTON PARK, SUTTON COLDFIELD

Members of the Royal Institute of British Architects and of its Allied Societies must not take part in the above competition because the conditions are not in accordance with the published Regulations of the Royal Institute for Architectural Competitions.

COMPETITION FOR NEW SCHOOL, WORCESTER

Members of the Royal Institute of British Architects and of its Allied Societies must not take part in the above competition because the conditions are not in accordance with the published Regulations of the Royal Institute for Architectural Competitions.

COMPETITION FOR RE-ERECTION OF THEATRE ROYAL, KING'S LYNN

The Competitions Committee desire to call the attention of members to the fact that the Conditions of the above competition are not in accordance with the Regulations of the R.I.B.A. The Competitions Committee are in negotiation with the promoters in the hope of securing an amendment. In the meantime members should not take part in the competition.

COMPETITION FOR CLUB SERVANTS' BUILDING, SELANGOR CLUB, KUALA LUMPUR

The Competitions Committee desire to call the attention of members to the fact that the conditions of the above competition are not in accordance with the Regulations of the R.I.B.A. The Competitions Committee are in negotiation with the promoters in the hope of securing an amendment. In the meantime members should not take part in the competition.

ABERDEEN : LAY-OUT OF KINCORTH

The Aberdeen Town Council are to hold a competition for the lay-out of their estate of Kincorth, which will be developed as a "satellite town." Conditions are not yet available.

ASHTON-UNDER-LYNE : SENIOR ELEMENTARY SCHOOL

The Corporation of Ashton-under-Lyne are proposing to hold a competition for a new Senior Elementary School to be erected on a site adjoining Springfield, Stalybridge Road, and Mr. F. Thorpe, J.P. [*F.*] has been appointed to act as Assessor. Conditions are not yet available.

BELFAST : NEW WATER OFFICES

The Belfast City and District Water Commissioners are proposing to hold a competition for new Office Buildings and Mr. H. Austen Hall [*F.*] has been appointed to act as Assessor. Conditions are not yet available.

BIRMINGHAM : NEW CENTRAL TECHNICAL COLLEGE, ETC.

The Corporation of the City of Birmingham invite architects of British nationality and domiciled in the United Kingdom to submit in competition designs for a new Technical College, Commercial College and College of Art and Crafts.

Assessor : Mr. James R. Adamson [*F.*].
Premiums : £750, £500, £250.
Last day for receiving designs : 12 March 1937.
Last day for questions : 19 October 1936.

Conditions of the competition may be obtained on application to Dr. P. D. Innes, C.B.E., Chief Education Officer, Margaret Street, Birmingham, 3. Deposit £2 2s.

DUNDEE : COLLEGE OF ART

The Dundee Institute of Art and Technology are to hold a competition for the Duncan of Jordanstone College of Art and Mr. J. R. Leathart [*F.*], has been appointed to act as Assessor. Conditions are not yet available.

EDMONTON : NEW TOWN HALL BUILDINGS

The Edmonton Urban District Council are proposing to hold a competition for new Town Hall Buildings, and Mr. E. Berry Webber [*A.*] has been appointed to act as Assessor. No conditions are available yet.

FARNHAM : NEW COUNCIL OFFICES

The Farnham Urban District Council invite architects practising in the United Kingdom to submit in competition designs for new Council Offices.

Assessor : Mr. E. Vincent Harris, A.R.A., O.B.E. [*F.*].
Premiums : £250, £150 and £100.
Last day for receiving designs : 31 October 1936.
Last day for questions : 31 August 1936.

Conditions of the competition may be obtained on application to Mr. A. A. Minns, Clerk of the Council, Council Offices, Farnham, Surrey. Deposit, £1 1s.

GLOUCESTER : NEW TECHNICAL COLLEGE

The Corporation of Gloucester invite architects of British nationality, domiciled in the United Kingdom, to submit in competition designs for a new Technical College, etc., at Brunswick Road, Gloucester.

Assessor : Mr. Henry V. Ashley [*F.*].
Premiums : £350, £250 and £150.
Last day for receiving designs : 15 December 1936
Last day for questions : 26 September 1936.

Conditions of the competition may be obtained on application to The Education Officer, Belsize House, Brunswick Square, Gloucester. Deposit, £2 2s.

HACKNEY : RECONSTRUCTION OF CENTRAL BATHS

The Hackney Borough Council are proposing to hold a competition for the reconstruction of the Central Baths, and Mr. Frederick J. Horth [*F.*] has been nominated to act as Assessor. Conditions are not yet available.

HOLBORN : PUBLIC BATHS AND WASHHOUSES

The Metropolitan Borough of Holborn invite architects to submit in open competition designs for new Public Baths, etc., to be erected in Broad Street and Endell Street.

Assessor : Mr. Kenneth M. B. Cross [*F.*].
Premiums : £300, £200 and £100.
Last day for receiving designs : 31 December 1936.
Last day for questions : 1 October 1936.

Conditions of the competition may be obtained on application to Mr. Lionel J. Walford, Town Clerk, Town Hall, High Holborn, London, W.C.1. Deposit £2 2s.

KEIGHLEY : NEW SCHOOL

The Keighley Education Committee are proposing to hold a competition for a new Council School at Guard House. Conditions are not yet available.

KIRKCALDY : NEW MUNICIPAL BUILDINGS

The Kirkcaldy Town Council are proposing to hold a competition for new Municipal Buildings to be erected at Wemyss Park. Mr. Thomas S. Tait [*F.*] has been appointed to act as Assessor. Conditions are not yet available.

LATHOM PARK, LANCASHIRE : MENTAL HOSPITAL AND INSTITUTION FOR MENTAL DEFECTIVES

The Lancashire Mental Hospitals Board invite Chartered and/or Registered British and Irish architects to submit in competition designs for a new Mental Hospital and a new Institution for Mental Defectives proposed to be erected on a site at Lathom Park, near Ormskirk.

Assessors : Professor Patrick Abercrombie [*F.*].
Mr. Charles E. Elcock [*F.*].
Mr. John Kirkland [*F.*].
Premiums : £500, £400 and £300 in each group.

The last day for applying for conditions has been extended to 31 October 1936. Application should be made to the Clerk to the Lancashire Mental Hospitals Board, County Hall, Preston. Deposit £3 3s.

LEAMINGTON SPA : NEW POLICE AND FIRE STATIONS

The Corporation of Leamington Spa are proposing to hold a competition for new Police and Fire Stations, and Mr. R.

Norman Mackellar [*F.*] has been appointed to act as Assessor. The competition will be open to Registered architects within the area of the Birmingham and Five Counties Architectural Association. Conditions are not yet available.

LEEDS: NEW CENTRAL PUBLIC BATHS

The Corporation of Leeds invite architects of British nationality to submit, in competition, designs for new Central Public Baths.

Assessor: Mr. Kenneth M. B. Cross [*F.*].
Premiums: £350, £200 and £100.
Last day for receiving designs: 29 October 1936.
Last day for questions: 28 September 1936.

Conditions of the competition may be obtained on application to the Town Clerk, Town Hall, Leeds. Deposit £1 1s.

LLANDUDNO: NEW HOSPITAL BUILDINGS

The Committee of the Llandudno and District Hospital invite registered architects of British nationality to submit in competition designs for a new hospital.

Assessor: Mr. R. Norman Mackellar [*F.*].
Premiums: £250, £150 and £75.
Last day for receiving designs: 31 October 1936.
Last day for questions: 28 August 1936.

Conditions of the competition may be obtained on application to the Honorary Secretary, New Hospital Scheme, Town Hall, Llandudno. Deposit £1 1s.

NEWCASTLE-UNDER-LYME: BLOCK OF SHOPS AND OFFICES

The Newcastle-under-Lyme Borough Council invite architects of British nationality to submit in competition designs for a new Block of Shops and Offices to be erected in High Street.

Assessor: Mr. Harry S. Fairhurst [*F.*].
Premiums: £300, £200 and £100.
Last day for submitting designs: 31 October 1936.
Last day for questions: 31 August 1936.

Conditions of the competition may be obtained on application to the Town Clerk, Town Clerk's Office, Newcastle-under-Lyme. Deposit £2 2s.

NEWPORT, MON.: NEW CIVIC CENTRE

The Newport (Mon.) Corporation invite architects of British nationality to submit in competition designs for new Civic Buildings, including Town Hall, Municipal Offices, Law Courts and Police Station.

Assessors: Mr. E. Berry Webber [*A.*].
Mr. C. F. Ward [*F.*].
Premiums: £750, £500, £300 and £200.
Last day for receiving designs: 30 November 1936.
Last day for questions: 1 September 1936.

Conditions of the competition may be obtained on application to Mr. O. Treharne Morgan, Town Clerk, Town Hall, Newport, Mon. Deposit £2 2s.

SOUTH SHIELDS: ASSEMBLY HALL AND LIBRARY

The South Shields Town Council propose to hold a competition for an Assembly Hall and Library to be erected on a site at the rear of the Town Hall. Mr. Arthur J. Hope [*F.*] has been appointed to act as Assessor. Conditions are not yet available.

COMPETITION FOR JOINT RAILWAY RECEIVING OFFICES IN LONDON

The four main railway companies (L.N.E.R., L.M.S., G.W.R. and Southern) invite British-born architects to submit in competition designs for Joint Receiving Offices.

Assessors: Mr. L. H. Bucknell [*F.*].
Mr. C. Grasemann.
Mr. W. H. Hamlyn [*F.*].
Mr. Charles Holden, V-P.R.I.B.A.
Premiums: £300, £125, £50 and £25.
Last day for receiving designs: 7 November 1936.
Last day for questions: 17 September 1936.

Conditions of the competition may be obtained on application to Mr. W. H. Hamlyn [*F.*], Chief Architect, L.M.S. Railway, St. Pancras Chambers, London, N.W.1. Deposit £1 1s.

COMPETITION RESULT

DARTFORD: NEW MUNICIPAL OFFICES AND ASSEMBLY HALL

1. Mr. Donald G. Walton [*A.*] (Maidenhead).
2. Mr. Charles H. Pike [*A.*] (London).
3. Mr. A. W. Kenyon [*F.*] (London).

Members' Column

Owing to limitation of space, notices in this column are restricted to changes of address, partnerships vacant or wanted, practices for sale or wanted, office accommodation, and appointments vacant. Members are reminded that a column in the Advertisement Section of the Journal is reserved for the advertisements of members seeking appointments in architects' offices. No charge is made for such insertions and the privilege is confined to members who are definitely unemployed.

NAME AND ADDRESS WANTED

Owing to an oversight, the name of the member who inserted the following notice in the last number of the JOURNAL was not noted:

ARCHITECT, M.A. [*A.*], aged 28, would like to meet another architect of approximately the same age who possesses a small office in London, with a view to sharing office accommodation and giving mutual assistance when necessary. Box No. 1896, c/o Secretary R.I.B.A.

Will he please communicate as soon as possible with the Secretary, R.I.B.A.?

PRACTICES FOR SALE

DECEASED MEMBER'S well-established Country Practice in Totnes, South Devon, for immediate disposal, with Lease of Offices. Particulars from Box No. 1996, c/o Secretary R.I.B.A.

WELL-ESTABLISHED practice on S.E. coast, £1,450 or offer. Apply in confidence Box No. 1206, c/o Secretary R.I.B.A.

SHARES IN OFFICES TO LET

A.R.I.B.A. with pleasant office in The Temple desires to share it with another. Good opportunity for junior beginning practice; or provincial Architect desiring London address. Write Box No. 8106, c/o Secretary, R.I.B.A.

FELLOW with attractive ground-floor office in W.C. district offers accommodation address at a moderate rental to another practitioner, including telephone, clerical services, etc.—Box No. 7106, c/o Secretary, R.I.B.A.

WOMAN ARCHITECT, with good furnished offices in the Bloomsbury district, wishes to share accommodation with another Woman Architect. Rent £35.—Reply Box 3096, c/o SECRETARY R.I.B.A.

OFFICE ADDRESS WANTED

ASSOCIATE, with small part time practice, desires address, preferably in the W.C.1 district, where letters and 'phone calls can be received and room is available for interviews. Drawing office accommodation not essential. Box No. 1406, c/o Secretary R.I.B.A.

TRADE CATALOGUES WANTED

C. J. PARKER [*A.*], State Architect, P.W.D., Jaipur, Rajputana, India, would be pleased to receive trade catalogues of any materials and building specialities.

DISSOLUTION OF PARTNERSHIP

The partnership which has hitherto existed between N. Fitzsimons [*F.*] and Robert Frater [*A.*] under the style of Tulloch & Fitzsimons at Friends' Provident Building, 58 Howard Street, Belfast, has been dissolved by mutual consent as from 31 August 1936.

N. Fitzsimons will continue to practice at the present address and R. Frater will practice at Reas's Buildings 142 Royal Avenue, Belfast, where he will be pleased to receive trade, catalogues, etc.

PARTNERSHIPS WANTED

ASSOCIATE (30), B.A.Cantab., wishes to obtain salaried partnership with established West End architect. Eight years thorough experience in full and complete charge of all branches and classes of work. Some capital available. Reply Box No. 2986, c/o Secretary R.I.B.A.

A.R.I.B.A., with previous experience as a practising architect, seeks partnership in an established provincial practice or overseas —preferably South Africa. Some capital available.—Apply Box No. 6016, c/o The Secretary, R.I.B.A., 66 Portland Place, W.1.

MEMBER (aged 28) would like to enter into partnership with an Architect who has a well-established practice either in London or within a radius of thirty miles or so of Arundel, Sussex. A practice that includes a certain amount of ecclesiastical work would be preferred, but that is not a necessity. Proper references available as well as some capital. Apply Box No. 9106, c/o Secretary, R.I.B.A.

PRACTICE WANTED

MEMBER [*L.*], age 43, with considerable and varied experience of high-class work abroad, is desirous of purchasing a well-established practice in England (provinces preferred) or a partnership in such a practice. Box No. 1306, c/o Secretary R.I.B.A.

CHANGES OF ADDRESS

MR. ARTHUR A. THOMAS [*A.*] has changed his address to 100 Madeira Avenue, Bromley, Kent.

MESSRS. LUCAS & ROBERTS, Architects and Surveyors, of Guildhall Chambers, High Street, Exeter, have changed their offices to 27 Dix's Field, Exeter, and will be pleased to receive trade circulars. Telephone : 3534.

MR. REGINALD J. DUKE [*F.*], has moved to 10 Stratford Place, W.1. Telephone number as before : Mayfair 1164.

REPLIES TO BOX No. 2876

THE POST advertised under Box No. 2876 of the issue of the JOURNAL for 8 August has been filled. The member inserting the notice thanks those who responded for all the time and trouble taken by them.

SECRETARIAL WORK WANTED

ARCHITECT'S WIDOW seeks employment as typist. Experienced in specifications. Work undertaken at shortest notice. Highest references. Write "N.A.," Melrose, The Chase, Thundersley, Essex.

Architects' and Surveyors' Approved Society

ARCHITECTS' ASSISTANTS' INSURANCE FOR THE NATIONAL HEALTH AND PENSIONS ACTS

Architects' Assistants are advised to apply for the prospectus of the Architects' and Surveyors' Approved Society, which may be obtained from the Secretary of the Society, 26 Buckingham Gate, London, S.W.1

The Society deals with questions of insurability for the National Health and Pensions Acts (for England) under which, in general, those employed at remuneration not exceeding £250 per annum are compulsorily insurable.

In addition to the usual sickness, disablement, and maternity benefits, the Society makes grants towards the cost of dental or optical treatment (including provision of spectacles).

No membership fee is payable beyond the normal Health and Pensions Insurance contribution.

The R.I.B.A. has representatives on the Committee of Management, and insured Assistants joining the Society can rely on prompt and sympathetic settlement of claims.

A.B.S. Insurance Department

PENSION AND FAMILY PROVISION SCHEME FOR ARCHITECTS

This scheme has been formulated by the Insurance Committee of the Architects' Benevolent Society and is available to all members of the R.I.B.A. and its Allied and Associated Societies.

The benefits under the scheme include :—

(1) A Member's Pension, which may be effected for units of £50 per annum, payable monthly and commencing on attainment of the anniversary of entry nearest to age 65. This pension is guaranteed over a minimum period of five years and payable thereafter for the remainder of life.

(2) The Beneficiary's Pension, payable as from the anniversary mentioned in Benefit No. 1, but to the widow (or other nominated beneficiary) if the member dies before age 65. The amount of this pension is adjusted in accordance with the disparity between the ages of the member and his wife.

(3) Family Provision. Under this benefit a payment of £50 yearly is made to the dependent from the date of death of the member prior to age 65 until attainment of the anniversary previously mentioned, after which benefit No. 2 becomes available.

Provision can be made for any number of units (of £50 per annum) up to a maximum of £500 per annum.

Pension benefit only may be secured if desired and the pension commuted for a cash sum.

Members are entitled to claim rebate of Income Tax on their periodical contributions to the scheme both in respect of pension and of family provision benefit.

Full particulars of the scheme will be sent on application to the Secretary, A.B.S. Insurance Department, 66 Portland Place, W.1.

It is desired to point out that the opinions of writers of articles and letters which appear in the R.I.B.A. JOURNAL must be taken as the individual opinions of their authors and not as representative expressions of the Institute.

Members sending remittances by postal order for subscriptions or Institute publications are warned of the necessity of complying with Post Office Regulations with regard to this method of payment. Postal orders should be made payable to the Secretary R.I.B.A., and crossed.

R.I.B.A. JOURNAL

DATES OF PUBLICATION.—1936.—7, 21 November ; 5, 19 December. 1937.—9, 23 January ; 6, 20 February ; 6, 20 March ; 10, 24 April ; 8, 22 May ; 5, 26 June ; 17 July ; 14 August ; 11 September ; 16 October.